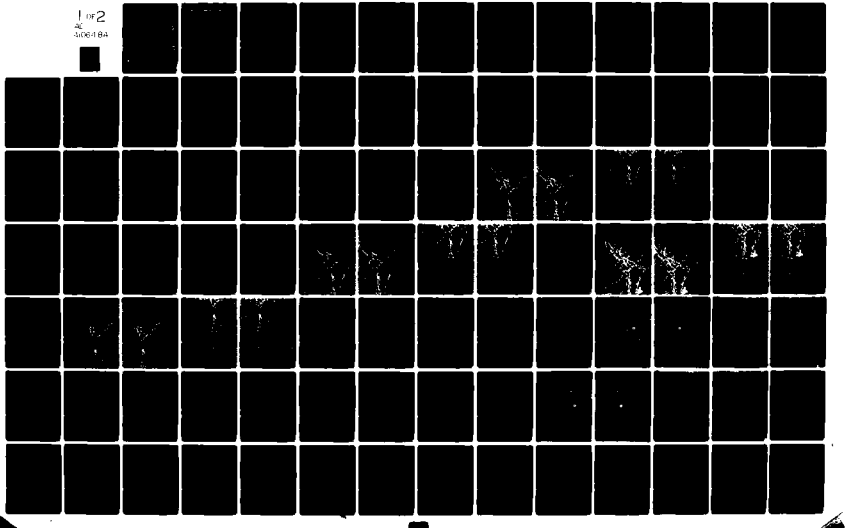
AD-A106 484 FEDERAL AVIATION ADMINISTRATION WASHINGTON DC F/G 13/2
METROPOLITAN WASHINGTON AIRPORTS POLICY SUPPLEMENT TO THE AUGUS--ETC(U)
SEP 81

UNCLASSIFIED NL

1 OF 2
AD
A106484



AD-A106484

Metropolitan Washington Airports Policy: Supplement to the August 1980 environmental impact statement, final.

September 1981

Department of Transportation
Federal Aviation Administration
Washington, D. C. 20590

(7)

Department of Transportation
Federal Aviation Administration
800 Independence Avenue, S. W.
Washington, D. C. 20591

LEVEL II

This Final Supplement to the August 1980 Environmental Impact Statement considers the potential environmental impacts of additional policy alternatives that are being added to the five alternatives previously assessed. A revised policy is being adopted, reflecting the Department's objective for establishing how Washington National and Dulles International Airports will contribute to meeting the overall aviation needs of the Metropolitan area in the 1980s and beyond. The revised policy considers: Passenger limit; Operating hours; Scheduling limitations; Noise limitations; Aircraft limitations; Nonstop limitations. A Metropolitan Washington Airport Policy will be selected from within the range of these alternatives.

DTIC
ELECTE
NOV 2 1981
H

17. Key Words
Environmental Impact Statements; Washington National Airport; Dulles International Airport; Airports; Noise; Emissions; Policies.

18. Distribution Statement
Document is available to the U. S. Public throught the National Technical Information Service, Springfield, Virginia 22161

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	118	

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

U.S. Department
of Transportation
**Federal Aviation
Administration**

Metropolitan Washington Airports Policy

Supplement to the August 1980 Environmental Impact Statement

Final

SEPTEMBER 1981

TABLE OF CONTENTS

	Page
Table of Contents	i
List of Figures	ii
List of Tables	iii
Section	
I. Summary	I-1
II. Description and Purpose of Federal Actions	II-1
Purpose	II-1
Revised Policy	II-1
Background	II-3
Basic Principles	II-11
Need for Supplement	II-13
III. Present Conditions and Impacts of Policy Alternatives	III-1
Introduction	III-1
Noise	III-1
Air Quality	III-41
Surface Access	III-50
Energy	III-51
IV. Unavoidable Adverse Effects and Actions Taken to Minimize Harm	IV-1
V. Relationship Between Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity	V-1
VI. Irreversible and Irretrievable Commitments of Resources	VI-1
VII. List of Preparers	VII-1
VIII. Responses to Substantive Comments on Draft Supplement to the August 1980 Environmental Impact Statement	IX-1
IX. Comments received on Draft Supplement to the August 1980 Environmental Impact Statement	X-1

List of Figures

		Page
Figure 1 -	National Airport 1981 Ldn Contours, Existing Conditions (Base Case)	III-6
Figure 2 -	National Airport 1981 Ldn Contours, Controlled Activity with Noise Restrictions-No Widebody Aircraft	III-14
Figure 3 -	Washington National Airport, 1981 Ldn Contours, Based on Level of Operations on July 31, 1981	III-16
Figure 4 -	National Airport 1990 Ldn Contours, Controlled Activity with Noise Restrictions-80 dBA Single Event Limit	III-18
Figure 5 -	Washington National Airport, Twin-Engine Piston Aircraft 72 dBA Single Event Noise Contours, North and South Departures	III-24
Figure 6 -	Washington National Airport, Twin-Engine Piston Aircraft 72 dBA Single Event Noise Contour, Anacostia River Departure	III-25
Figure 7 -	Washington National Airport, Medium Twin-Engine Turboprop Transport 72 dBA Single Event Noise Contour, North and South Arrivals	III-34

List of Tables

			Page
Table I	-	Additional Alternative Policies for National Airport	III-3
Table II	-	Washington National Airport Aircraft Operations Forecasts	III-5
Table III	-	Noise Impacts at Washington National Airport	III-7
Table IV	-	General Aviation Nighttime Operations, Washington National Airport	III-21
Table V	-	Comparative Noise Levels	III-26
Table VI	-	Estimated Maximum A-Weighted Sound Levels for Airplanes at Part 36 Appendic C Locations, Takeoff	III-28
Table VII	-	Estimated Maximum A-Weighted Sound Levels for Airplanes at Part 36, Appendix C Locations, Takeoff	III-29
Table VIII	-	Estimated Maximum A-Weighted Sound Levels for Airplanes at Part 36, Appendix C Locations, Approach	III-35
Table IX	-	Estimated Maximum A-Weighted Sound Levels for Airplanes at Part 36, Appendix C Locations, Approach	III-37
Table X	-	Total Emissions Inventory	III-44
Table XI	-	Forecast of Air Carrier Operations at Washington National Airport	III-58
Table XII	-	Air Carrier Fuel Consumption at Washington National Airport (gallons per day)	III-59
Table XIII	-	Index of Air Carrier Fuel Consumption at Washington National Airport	III-60

DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

Metropolitan Washington Airports

Final

Supplement to the Environmental Impact Statement

Metropolitan Washington Airports

Policy Statement

September 1981

SECTION I: SUMMARY

This final supplement to the August 1980 Environmental Impact Statement is submitted for review pursuant to the following public law requirements: Section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)).

Summary

( ) Draft EIS (X) Final Supplement to EIS

Department of Transportation, Federal Aviation Administration, John E. Wesler, Director of Environment and Energy, 800 Independence Avenue, S.W., Washington, District of Columbia 20591 (telephone: 202-426-8406).

NAME OF ACTION AND BACKGROUND

( ) Legislative (X) Administrative

The Washington-Baltimore region is served by three air carrier airports, two of which, Washington National and Dulles International Airports, are operated by the Federal Government. The two Federal airports have been operating over the past decade without a formalized, comprehensive policy defining their respective roles and guiding their day-to-day operations. Significant technical, regulatory, and social changes have occurred over this period of time along with the recognition of some significant facility and environmental problems that have developed at Washington National Airport.

These problems at Washington National Airport, along with the other changes that have occurred over the past decade, suggest the need for a policy which will guide the two Federal airports in serving the air transportation needs of the Nation's Capital. It is clear that operating, planning, and investment decisions at the two Federal airports cannot logically be made without an underlying policy which sets forth the manner in which each of the two facilities is to contribute to meeting the region's overall aviation needs.

In August 1980, the Department of Transportation (DOT) issued a formal Metropolitan Washington Airports Policy, supported in part by an Environmental Impact Statement. That policy was then issued as an

operating rule on September 15, 1980, by the Administrator of the Federal Aviation Administration (FAA). That rule was to have become effective on January 5, 1981. The Congress, in the DOT and Related Agency's Appropriation Act of 1981, mandated a delay in certain aspects of the policy. The effective date of the entire policy was then postponed until April 26, 1981.

On February 27, 1981, the Secretary of Transportation proposed a further delay in the effective date of the Metropolitan Washington Airports Policy and its implementing regulations. The delay in the effective date was necessary in order to allow time for a thorough review of the policy and its implications, especially in view of Executive Order 12291, which provided new government-wide standards for the promulgation of regulations. Therefore, on March 24, 1981, in order to provide adequate time to review the Metropolitan Washington Airports Policy, the effective date of its implementing regulations was postponed until October 25, 1981.

On July 8, 1981, the Secretary of Transportation announced the results of his review of the Metropolitan Washington Airports Policy, and proposed a revised policy for public review and comment. A Draft Supplement to the August 1980 Environmental Impact Statement, and a Preliminary Regulatory Evaluation were also issued to complement that proposal. Comments on these documents were received through August 31, 1981. This Final Supplement to the August 1980 Environmental Impact Statement forms a part of the final Metropolitan Washington Airports Policy.

POLICY ALTERNATIVES

The Environmental Impact Statement, dated August 1980, analyzed five alternative policies for the operation of the Metropolitan Washington Airports. Those alternatives were:

* No Policy Change (Base Case) at Washington National and Dulles International Airports.

* Expanded Growth Policy at Washington National Airport

* Controlled Growth Policy to 18,000,000 Passengers Annually at Washington National Airport

* Controlled Growth Policy to 16,000,000 Passengers Annually at Washington National Airport

* Reduced Activity Policy at Washington National Airport

This Final Supplement to the August 1980 Environmental Impact Statement addresses three additional alternative policies for the operation of the Metropolitan Washington Airports:

* Controlled Activity Policy with Noise Limitations at Washington National Airport

* Unconstrained Activity Policy with Noise Limitations at Washington National Airport

* Controlled Activity Policy with Noise Limitations at Washington National Airport, modified by Wilson Amendment to H.R. 4209, FY-1982 DOT Appropriations Act.

The Controlled Activity Policy with Noise Limitations would impose hourly scheduling limitations on operations at Washington National Airport, would impose annual passenger limitations there, and would also impose noise limitations on the types of aircraft permitted to operate there, with more stringent noise criteria for nighttime hours.

The Unconstrained Activity Policy with Noise Limitations would impose no hourly scheduling limitations on any class of operators, and would impose no annual passenger limitations, but would impose noise limitations on the aircraft permitted to operate at Washington National Airport. Those noise limitation criteria would be more stringent during nighttime hours.

On September 10, 1981, the House of Representatives adopted the following amendment to H.R. 4209, the Fiscal Year 1982 DOT Appropriations Act:

"Section 324. No funds appropriated by this Act shall be used to pay any salary or other expense for the purpose of putting into effect or enforcing any rule or order which requires any reduction in the total daily number of flights by (a) air carriers except air taxis, or (b) air taxis, at Washington National Airport below the number operated on July 31, 1981; except that this limitation shall not apply to Special Federal Aviation Regulation 44, amendments thereto or orders issued thereunder."

Airport records indicate that 808 air carrier and air taxi operations actually occurred on July 31, 1981, including 12 extra sections. The Official Airline Guide schedules for that day indicate that 615 operations were scheduled that day by aircraft with 56 or more seats, and 186 operations were scheduled by aircraft with less than 56 seats, for a total scheduled operations of 801. Therefore, it appears that the amendments noted above would be satisfied if scheduling limitations were imposed as follows for the period from 7:00 am through 9:59 pm:

air carriers	41 per hour (615 per day) plus extra sections
commuters	13 per hour (195 per day) plus extra sections
General Aviation	12 per hour (180 per day)

Accordingly, a third new alternative, the Controlled Activity Policy with Noise Limitations, modified to comply with the September 10, 1981, amendment to H.R. 4209, would impose hourly scheduling limitations on operations at Washington National Airport, would impose noise limitations on the aircraft permitted to operate there, and would impose no passenger limitations only through Fiscal Year 1982. Effective October 1, 1982, scheduling limitations would be imposed at 37 air carrier operations per hour, 17 commuter operations per hour, and 12 General Aviation operations per hour. At that time, an annual passenger limitation of 16,000,000 would also become effective. The noise limitations would be more stringent during nighttime hours.

All of these alternative policies include the more stringent daytime noise limitation criterion in five years, the 1,000-statute-mile nonstop operating limitation, and the possible introduction of "widebody" aircraft.

ENVIRONMENTAL CONSEQUENCES

The environmental consequences associated with the five alternative policies addressed in the August 1980 Environmental Impact Statement remain valid, and are described adequately in that document. The environmental consequences associated with the three new alternative policies are addressed in this Final Supplement to the Environmental Impact Statement. In addition, measures which would be taken to mitigate adverse environmental consequences have been incorporated in each of the policy alternatives.

The analyses of the noise impacts of the two new policy alternatives, compared to those of the five alternatives analyzed earlier, indicate that by 1990, all of the three new policy alternatives would be as effective in reducing noise levels around Washington National Airport as would the Reduced Activity Policy alternative assessed in the August 1980 Environmental Impact Statement. The residents impacted by the eight policy alternatives are as follows:

Noise Impacted Population Within Ldn 65 Contours

	National	Dulles	BWI	Regional Total
Existing 1979*	75,500	4,500	30,000	109,500
No Policy Change 1990*	116,000	3,500	22,900	142,400
Expanded Growth 1990*	82,000	3,700	22,900	108,600
Controlled Growth to 18,000,000 1990*	24,000	5,100	23,500	52,600
Controlled Growth to 16,000,000 1990*	21,000	5,200	24,100	50,300
Reduced Activity 1990*	1,200	6,000	25,700	32,900
Controlled Activity with Noise Restrictions 1990	1,200	3,800	23,000	28,000
Unconstrained Activity with Noise Limitations 1990	1,200	3,200	22,500	26,900
Controlled Activity with Noise Limitations Modified 1990	1,200	3,800	23,000	28,000

*Taken from August 1980 Environmental Impact Statement

Air quality impacts were compared against the five alternative policies assessed in the August 1980 Environmental Impact Statement, on the basis of total emissions inventory at the three Washington-area airports. Total emissions loading for the three additional alternative policies evaluated in this Final Supplement will increase at Washington National Airport and in the National Capital Interstate Air Quality Control Region, but will remain relatively unchanged within the bi-regional area if Baltimore-Washington International Airport is included.

For the three new alternative policies, the only serious impact on surface access would occur under the Unconstrained Activity Policy, which would be approximately the same as that forecast for the Expanded Growth Policy alternative, assessed in the August 1980 Environmental Impact Statement.

Energy impacts depend greatly on the details of the alternative policy assessed. Energy efficiency will improve with the use of new technology aircraft, required in order to meet proposed noise limitations, and with longer stage lengths permitted by the 1,000-statute-mile nonstop operating limitation. For the Unconstrained Activity Policy alternative, increased delays at Washington National Airport could decrease energy efficiency.

The impacts in the remaining environmental disciplines, including parklands and historical sites, social and economic conditions, and

natural systems, are contained within the range of impacts assessed in the August 1980 Environmental Impact Statement.

AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

The primary area of controversy with the Metropolitan Washington Airports Policy centers around the conflicting and competing interests that have historically influenced the use of the two Federal airports. Clearly, this controversy can only be resolved by the policy selection of the Secretary of Transportation.

POLICY DECISION

This Final Supplement to the Environmental Impact Statement assesses three additional alternative policies, in addition to the five assessed in the August 1980 Environmental Impact Statement. A Metropolitan Washington Airport Policy will be selected from within the range of these alternatives.

This Final Supplement was made available to EPA and the public on: September 22, 1981.

Director of Environment and Energy

9-22-81
Date

SECTION II: DESCRIPTION AND PURPOSE

PURPOSE

This Final Supplement to the August 1980 Environmental Impact Statement considers the potential environmental impacts of additional policy alternatives that are being added to the five alternatives previously assessed. Together they consider and support a new policy action to replace the August 1980 Metropolitan Washington Airports Policy. The Department of Transportation deferred the August 1980 policy in response to Congressional action. Implementation of that August 1980 policy was further delayed in early 1981 pending review by the Secretary of Transportation and the Administrator of the Federal Aviation Administration.

As a result of that review, a revised policy is being adopted, reflecting the Department's objective for establishing how Washington National and Dulles International Airports will contribute to meeting the overall aviation needs of the Metropolitan Washington Area in the 1980s and beyond. This preferred alternative is summarized below.*

REVISED POLICY

Passenger Limit. There will be a limit of 16,000,000 per year specified on the number of passengers at Washington National

*This preferred alternative will be amended as necessary to comply with any changes enacted by the Congress.

Airport. There will be no passenger limit at Dulles International Airport.

Operating Hours. Washington National Airport and Dulles International Airport will be operated 24 hours per day.

Scheduling Limitations. Air carriers may schedule no more than 37 operations per hour, and commuter air carriers (defined as those using aircraft having fewer than 56 seats) may schedule no more than 17 operations per hour at Washington National Airport during the period from 7:00 a.m. through 9:59 p.m., subject to the noise limitations noted below. Extra sections will not be included in these limitations. During Instrument Flight Rule conditions, general aviation will be limited to no more than 12 operations per hour at Washington National Airport. There will be no scheduling limitations at Dulles International Airport.

Noise Limitations. For all daytime operations (7:00 a.m. through 9:59 p.m.) at Washington National Airport, there will be a noise limitation criterion of 86 dBA, as generated on takeoff using the standardized test conditions specified in Part 36 of the Federal Aviation Regulations (14 CFR 36); for nighttime departures (10:00 p.m. through 6:59 a.m.), a noise limitation criterion of 72 dBA as generated on takeoff; and for nighttime arrivals, a noise limitation criterion of 85 dBA as generated on approach. Effective October 1, 1986, the daytime noise limitation criterion

will drop to 80 dBA, as generated on takeoff. The nighttime noise limitations will remain at 72 dBA on takeoff and 85 dBA on approach. There will be no noise limitations at Dulles International Airport.

Aircraft Limitations. The operation of additional models of aircraft not now operated at Washington National Airport will be allowed if that operation is found to be safe by the Administrator of the FAA, based on his model-by-model examination, and is found to be operationally acceptable by the Director, Metropolitan Airports. There will be no new aircraft limitations at Dulles International Airport.

Nonstop Limitation. There will be a 1,000-statute-mile nonstop operating limitation for flights to and from Washington National Airport. There will be no nonstop operating limitations for flights at Dulles International Airport.

BACKGROUND

The Washington-Baltimore region is served by three air carrier airports, two of which, Washington National and Dulles International Airports, are operated by the Federal Government. The two Federal airports have been operating over the past decade without a formalized, comprehensive policy defining their respective roles and guiding their

day-to-day operations. Significant technical, regulatory and social changes have occurred over this period of time, along with the recognition of some significant facility and environmental problems that have developed at Washington National Airport.

These problems at Washington National Airport, along with the other changes that have occurred over the past decade, have created the need for a policy which will guide the two Federal airports in serving the air transportation needs of the Nation's Capital. It is clear that operating, planning and investment decisions at the two Federal airports should be made in conjunction with an underlying policy which sets forth the manner in which each of the two facilities is to contribute to meeting the region's overall aviation needs.

In March 1978, the Department of Transportation (DOT) issued a proposed policy and a Draft Environmental Impact Statement (DEIS) for Metropolitan Washington Airports. A wide range of policy options was presented in the analysis, including an evaluation of 32 policy alternatives. Comments on the policy options were received at public hearings held in May 1978 and written comments were received from Members of Congress, Federal agencies, state, municipal and local agencies, public and private organizations, and from interested individuals.

The comments revealed sharp differences of opinion on a policy for the two Federal airports. Many of the county and municipal governments of the Metropolitan Washington Area, along with local citizens, expressed the strong view that with two other air carrier airports available in the region the concentration of air carrier activity at Washington National Airport is an unwarranted and unnecessary burden on the airport neighbors who are subject to the impacts of aircraft noise. Other interests, many of which are outside the Washington area, expressed an equally strong national view and believe Washington National Airport's uniquely convenient location should be made available to air travelers who want direct access to downtown Washington. Those supporting this national interest argue that Washington National Airport, as a Federally owned and operated airport serving the Nation's Capital, necessarily serves more of a national role than a local one.

The DOT then elected to modify the 1978 policy proposal, given the changes brought about by the deregulation of the air transportation industry, and to issue a revised policy proposal, a Notice of Proposed Rulemaking, and a Supplement to the Draft Environmental Impact Statement. The supplement was issued in January 1980 and another set of public hearings was conducted in March 1980. A Metropolitan Washington Airports Policy and an Environmental Impact Statement were issued in August 1980.

This policy was to become effective on January 5, 1981. The Congress, in the DOT and Related Agency's Appropriation Act of 1981, Pub. L. 96-400, however, mandated a delay in certain aspects of the policy. The effective date of the entire policy, including the perimeter, was postponed until April 26, 1981, because the policy components are interrelated and should be treated as a package and not in a piecemeal fashion.

On February 27, 1981, the Secretary of Transportation proposed a further delay of the effective date for the Metropolitan Washington Airports Policy and implementing regulations. The proposed change in the effective date was necessary to ensure compliance with Executive Order 12291 (46 FR 13193; February 19, 1981), which provided new government-wide standards for the promulgation of rules. In addition, the change in the effective date was necessary to consider the Department's permanent rulemaking on slot allocations at Washington National Airport, and was consistent both with a request by the Senate Commerce Committee to the Secretary that the policy be reviewed and with Congressional concerns expressed in the action that led to the initial delay of the policy until April 26, 1981.

Therefore, on March 24, 1981, in order to provide adequate time to review the Metropolitan Washington Airports Policy, the effective date

of the regulation was postponed by the Secretary until October 25, 1981.

Following a comprehensive review, the Secretary of Transportation on July 8, 1981, proposed a revised Metropolitan Washington Airports Policy, in the form of a Notice of Proposed Rulemaking (46 FR 36068, July 13, 1981), supported by a Draft Supplement to the August 1980 Environmental Impact Statement, and later by a Preliminary Regulatory Evaluation. A public hearing was held on July 28-29, 1981, and written comments were received through August 31, 1981. Following a careful review and analysis of those comments, a final policy was developed.

Review of Policy Objectives

The Department of Transportation's consideration of policy alternatives for Washington National and Dulles International Airports has always been undertaken with the following objectives in mind:

1. To rationalize the role and use of the two airports from an overall transportation viewpoint;

2. To achieve optimum utilization of existing and planned capacity at the airports;

3. To eliminate unnecessary constraints on the use of aircraft

at the airports, consistent with safety requirements and operational acceptability;

4. To ensure that the growth, uses, and roles of the airports are as compatible as possible with the changing demands and expectations of the community, especially with respect to environmental impacts; and

5. To permit planning for and implementation of improvements at Washington National and Dulles International Airports, consistent with the designated role of each facility.

Alternative Policy Considerations

The August 1980 Environmental Impact Statement for the Metropolitan Washington Airports Policy considered five alternative policies. These alternatives covered a range of options from a significant reduction in activity at Washington National Airport to an expanded role for the airport. Included were the consequences of making no change in the current operating practice at Washington National Airport.

Although the Federal Aviation Administration does not establish operational policies at Baltimore-Washington International Airport, policy decisions at Washington National and Dulles International Airports will affect air traffic activity at Baltimore-Washington

International Airport and, therefore, impacts associated with each alternative were also analyzed for that airport.

The five alternatives were developed as a result of the FAA's study into options available at each of the airports and also as a direct result of comments provided throughout the environmental review process. Initially, 32 preliminary alternatives or cases were studied by the FAA in a report entitled Metropolitan Washington Airport Policy Analysis. Based on this work, a wide range of policy options defining various roles for the airports was evaluated in the Draft Environmental Impact Statement for the Metropolitan Washington Airports Policy published in March 1978. Quotas, curfews and possible widebody aircraft service at Washington National Airport were examined for potential policy impacts on regional air travelers, community residents, and airport investment requirements. Subsequent to this study, a Supplement to the Draft Environmental Impact Statement was published in January 1980. That supplement considered three basic alternatives plus a proposed policy for the operation of the airports.

The August 1980 Environmental Impact Statement refined these alternatives and expanded the alternatives under consideration as a result of continued FAA study and comments received from various Federal, state and local agencies, community groups, the aviation industry and the general public. The alternatives considered in that analysis included:

- o No Policy Change (Base Case)

- o Expanded Growth policy at Washington National Airport

- o Controlled Growth Policy to 16,000,000 Passengers Annually at Washington National Airport

- o Controlled Growth Policy to 18,000,000 Passengers Annually at Washington National Airport

- o Reduced Activity Policy at Washington National Airport

Each alternative was defined on the basis of passenger limits, operating and scheduling hours, the allocation of slots among the classes of aircraft activity, the type of aircraft permitted to use the airport, and a maximum nonstop operating limitation.

The policy that was adopted in August 1980 placed a 17 million annual passenger limit on Washington National Airport; specified operating and scheduling hours; allocated slots among the classes of aircraft activity; considered use of new types of aircraft permitted at Washington National Airport; and defined a maximum nonstop operating limitation for Washington National Airport.

BASIC PRINCIPLES

This revised policy addresses a controversy over the proper uses of Washington National Airport and Dulles International Airport that has now existed for more than a decade. No action can be taken which would eliminate that controversy. A piecemeal approach to the issues of the proper roles and uses of these airports is inappropriate. There have been extensive studies related to this controversy, including environmental, economic, community impact, and policy alternative analyses. This revised comprehensive policy is adopted after considering these studies and the arguments presented by each protagonist, and after taking all of them into consideration. The resultant policy is not likely to be acceptable to all factions, but it represents the Department's views of the proper role and best use of these two airports in the public interest.

Certain basic principles, along with the environmental consequences, guided the development of the new policy for the Washington Metropolitan Airports. They need to be understood by all sides to the controversy, hopefully to gain their enthusiastic support. They are:

(1) The principal local objection to Washington National Airport is noise, with a secondary objection being ground congestion. Therefore, any rational solution must be noise responsive and congestion sensitive.

(2) Washington National Airport is a national asset that belongs to all of the people, and should be used to its optimum capability commensurate with noise and congestion considerations, with an efficient balancing of air traffic among the other Washington area airports, Dulles and Baltimore-Washington International Airports.

(3) The development, production, and procurement of new, quieter aircraft is a time-consuming process, requiring several years at a minimum to accomplish; therefore, to respond to principle (1) and meet the needs of principle (2) above, a long-term policy must be established that affords each affected group the opportunity to make meaningful future plans.

(4) Fleet composition of most air carriers is currently undergoing considerable change, and with proper incentives can be oriented to the procurement of quieter aircraft at an accelerated rate. However, the Nation cannot afford the unwarranted immediate loss of over $7 billion in fleet inventory.

(5) Airside and landside constraints limit capacity at Washington National Airport; therefore, the policy for Metropolitan

Washington Airports should extend sufficiently into the future to reflect forecasts of new technology and operating efficiencies which will be important factors in optimizing the use of the available airport acreage. Accordingly, the policy adopted needs to be made applicable at least through the end of this century, while at the same time recognizing that modifications may result within that period as new technology or operating efficiencies permit.

(6) Air carriers in making their fleet plans and purchases of new aircraft have long known the runway, terminal, and landside limitations at Washington National Airport; but, similarly, citizens who bought homes near the airport or near its flight paths also knew that the National Airport existed and there was no likelihood of it being abandoned.

(7) Satisfactory ground transportation will not exist between Dulles International Airport and the center of Washington, D.C., until completion of the I-66 bypass in 1984. The next generation of quieter aircraft also will not be in significant use until that same timeframe.

(8) The Federal Government should take no action that unreasonably inhibits our free enterprise system or the

ability to compete, and should regulate only to the degree necessary for air safety and implementation of the principles outlined above. Stated simply, the Federal Government should control, not constrain.

This revised policy for the Metropolitan Washington Airports precedes publication by the Federal Aviation Administration of an environmental study required under Section 105 of the Aviation Safety and Noise Abatement Act of 1979 (Public Law 96-193, February 18, 1980), as implemented by its Federal Aviation Regulation (FAR) Part 150. The Act requires publication of a noise exposure map and a noise compatibility program for each of the two Federal airports, Washington National Airport and Dulles International Airport, before March 1, 1982. However, the policy adopted for Metropolitan Washington Airports provides the framework within which the Section 105 study will be accomplished.

NEED FOR SUPPLEMENT

Council on Environmental Quality (CEQ) Regulations in 42 CFR 1502.9(c), requires the preparation of supplemental analyses if the agency makes substantial changes in the proposed action (revised policy for Metropolitan Washington Airports) that are relevant to environmental concerns. FAA Order 1050.1C, Appendix 6, paragraph 104, which implements 42 CFR 1502.9(c), requires a supplement if a reasonable alternative is significantly different from alternatives previously considered.

SECTION III: PRESENT CONDITIONS AND IMPACTS OF POLICY ALTERNATIVES

INTRODUCTION

This section of the Final Supplement to the Environmental Impact Statement presents a brief summary of the existing conditions at Washington National Airport, and the likely changes that would result from either of three additional policy alternatives, which are evaluated here. These changes are also related to the analyses of the five policy alternatives presented in the August 1980 Environmental Impact Statement. Those earlier results are not repeated here, except where convenient for direct comparisons.

NOISE

The noise analysis in this Final Supplement to the Environmental Impact Statement is based on, and extends the analysis presented in the August 1980 Environmental Impact Statement. The assumptions regarding aircraft noise, listed on Page III-5 of that statement, remain valid for this analysis, except as listed on Page III-11 of this document.

Base Case (Existing Conditions, No Policy Change)

The base case as defined in the August 1980 Environmental Impact Statement, page III-5, has been re-calculated and included in this text for convenience of comparison. The base case was re-calculated using

the Average Day-Night Sound Level (Ldn)[1] noise unit, as required by Federal Aviation Regulation, Part 150, which has been issued since the August 1980 analysis, and sets forth Ldn as the standard system for evaluating noise around airports. Noise Exposure Forecast (NEF) was used for the noise analysis presented in the August 1980 Environmental Impact Statement.

The base case operating limitations and assumptions are described in Table I, and are based on the operating practices currently in use. The re-calculated base case utilizes the May 1981 actual operations at Washington National Airport, and a revised 1970 census which has included projected 1980 population distributions and demographics. This computer-based demographic data base provided the population and housing information presented for the present analysis. The results presented in the August 1980 Environmental Impact Statement, while using the same operational assumptions and operating practices, were based on 1979 operations and an earlier population data base.

---

[1] Average Day-Night Sound Level is the equivalent A-Weighted Sound Level over a 24-hour period, with the sound levels from 2200 through 0659 local time increased by 10 decibels. As an approximation, Average Day-Night Sound Level is equal to Noise Exposure Forecast (NEF) plus 35 decibels. Ldn = NEF + 35. Thus, the Ldn 65 noise exposure contour approximates the NEF 30 contour, for comparison.

TABLE 1

ADDITIONAL ALTERNATIVE POLICIES FOR NATIONAL AIRPORT

OPTIONS	EXISTING CONDITIONS (Base Case)	CONTROLLED ACTIVITY w/NOISE RESTRICTIONS 1981	CONTROLLED ACTIVITY w/NOISE RESTRICTIONS 1986	UNCONSTRAINED ACTIVITY w/NOISE RESTRICTIONS 1981	UNCONSTRAINED ACTIVITY w/NOISE RESTRICTIONS 1986	CONTROLLED ACTIVITY W/NOISE RESTRICTIONS, MODIFIED 1981	CONTROLLED ACTIVITY W/NOISE RESTRICTIONS, MODIFIED 1986
PASSENGER LIMITATION	No limit on total annual passengers at National.	16,000,000	16,000,000	No Limit	No Limit	No Limit	16,000,000
SCHEDULING LIMITATION	Air carrier - 40 per hour (plus extra sections) Commuters 8/hr. Gen. Av. 12/hr. Scheduling hours for air carrier jets: 7:00 a.m. until 10:00 p.m. Air carrier and commuter props: any time within scheduling limits.	Air carrier - 37/hr. (plus extra sections); Commuters - 17/hr.; General Aviation - 12/hr.; 7:00 a.m. through 9:59 p.m.	Air Carrier - 37/hr. (plus extra sections); Commuters - 17/hr.; General Aviation - 12/hr.; 7:00 a.m. through 9:59 p.m.	No hourly limitations.	No hourly limitations.	Air carrier - 41/hr. (plus extra sections); Commuters - 13/hr.; General Aviation - 12/hr.; 7:00 a.m. through 9:59 p.m.	Air carrier - 37/hr. (plus extra sections; Commuters - 17/hr.; General Aviation - 12/hr.; 7:00 a.m. through 9:59 p.m.
NOISE LIMITATIONS	Informal agreement, no general aviation jets between 11:00 pm and 7:00 am.	From 7:00 am thru 9:59 pm: noise limit of 86 dBA on takeoff; from 10:00 p.m. thru 6:59 a.m.: noise limit of 72 dBA on takeoff and 85 dBA on approach.	From 7:00 am thru 9:59 pm: noise limit of 80 dBA on takeoff; from 10:00 pm thru 6:59 am: noise limit of 72 dBA on takeoff and 85 dBA on approach.	From 7:00 am thru 9:59 pm: noise limit of 86 dBA on takeoff; from 10:00 p.m. thru 6:59 a.m.: noise limit of 72 dBA on takeoff and 85 dBA on approach.	From 7:00 am thru 9:59 p.m.: noise limit; of 80 dBA on takeoff; from 10:00 pm thru 6:59 am: noise limit of 72 dBA on takeoff and 85 dBA on approach.	From 7:00 a.m. thru 9:59 p.m.: noise limit of 80 dBA on takeoff; from 10:00 p.m. thru 6:59 a.m.: noise limit of 72 dBA on takeoff and 85 dBA on approach.	From 7:00 a.m. thru 9:59 pm.: noise limit of 80 dBA on takeoff; from 10:00 p.m. thru 6:59 a.m.: noise limit of 72 dBA on takeoff and 85 dBA on approach
AIRCRAFT LIMITATION	Maximum size permitted 727-200 (No 4 eng. jets, 2 or 3 eng. widebody.)	All models found to be safe and operationally acceptable.	All models found to be safe and operationally acceptable.	All models found to be safe and operationally acceptable.	All models found to be safe and operationally acceptable.	All models found to be safe and operationally acceptable.	All models found to be safe and operationally acceptable.
NONSTOP LIMITATION	650 statute mi. plus 7 "grandfather cities".	1000 statute miles nonstop.	1000 statute miles nonstop.	1000 statute miles nonstop.	1000 statute miles nonstop.	1000 statute miles nonstop.	1000 statue miles nonstop.

The August 1980 Environmental Impact Statement used August 1979 operations at Washington National Airport as the base case for comparison of the five alternative policies analyzed. For the present analysis, May 1981 operations at Washington National Airport were used for comparison with the three new policy alternatives. Air carrier jet operations decreased approximately 5% between August 1979 and May 1981. Thus, essentially, the two sets of analyses are interchangeable regarding comparative noise impacts.

Because of the nationwide air traffic controllers' walkout on August 3, 1981, the actual level of operations at Washington National Airport, and many other larger airports in the United States, is somewhat below the level of operations in May 1981, and will probably remain below that level for a year or more, until sufficient trained controllers become available to permit safe operations at higher levels. This is considered a temporary aberration, however, and has been disregarded for purposes of this evaluation.

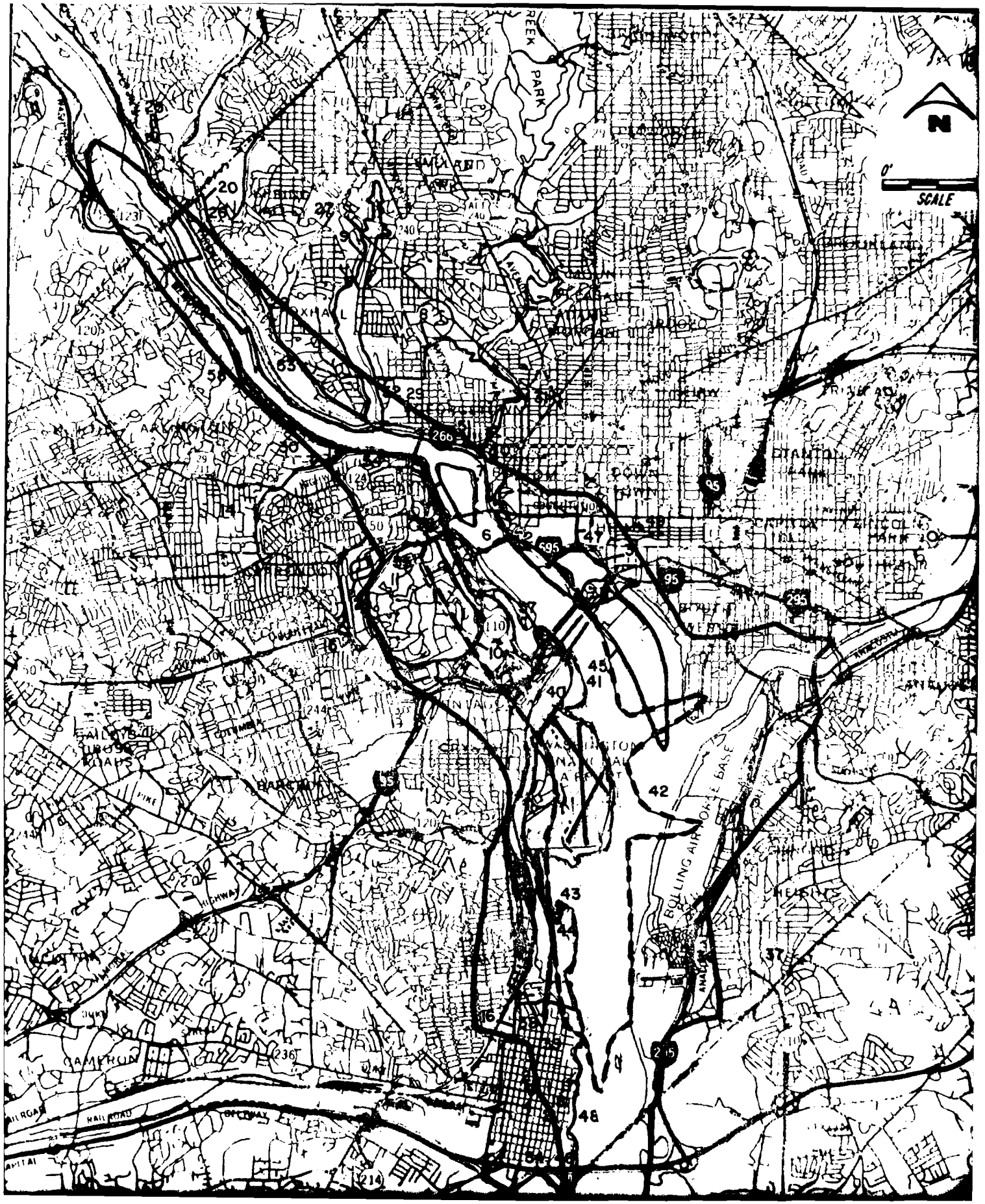
Table II lists the air carrier aircraft operations for May 1981. The associated noise impacts at Washington National Airport are shown in Figure 1, and in Table III. Figure 1 indicates that the present Average Day-Night Sound Level (Ldn) 65 contour extends approximately 7.7 miles northwest along the Potomac River corridor from Washington National Airport. Downriver from the airport, the Ldn contour extends about 5.6 miles south. The Ldn 75 contour extends approximately 2.6 miles south of the Runway 36 threshold, and about 2.5 miles northwest

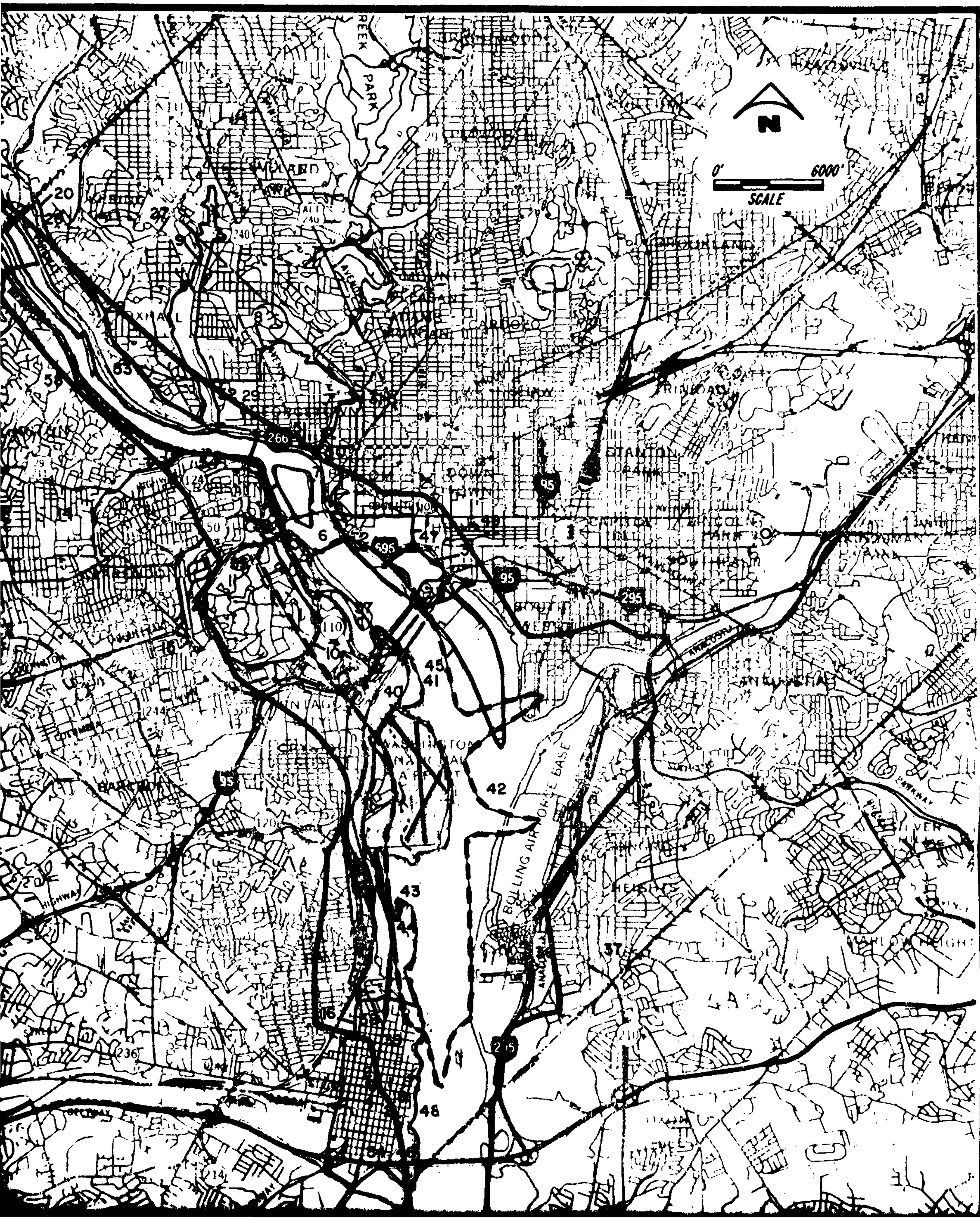
TABLE II

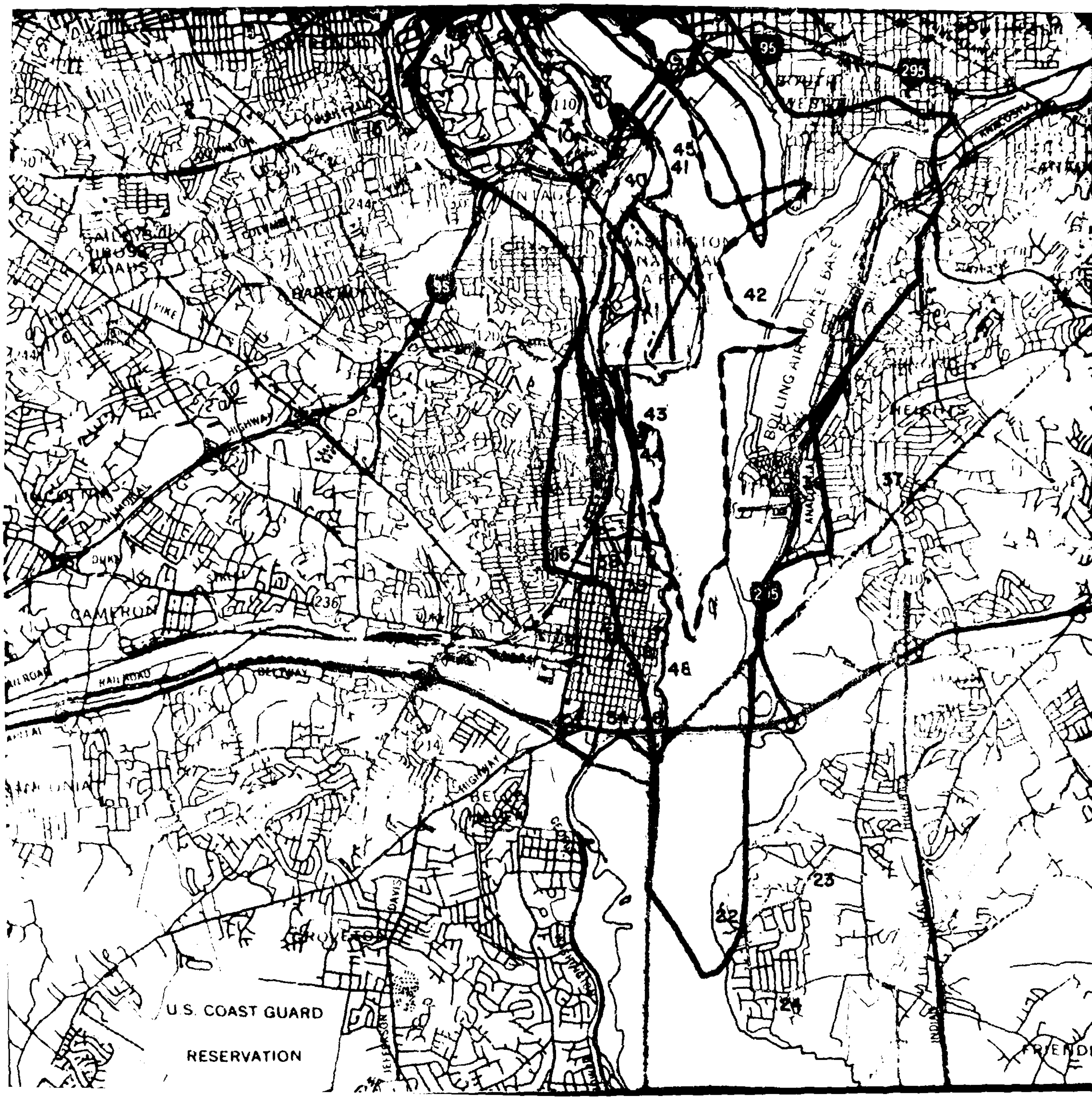
WASHINGTON NATIONAL AIRPORT AIRCRAFT OPERATIONS FORECASTS

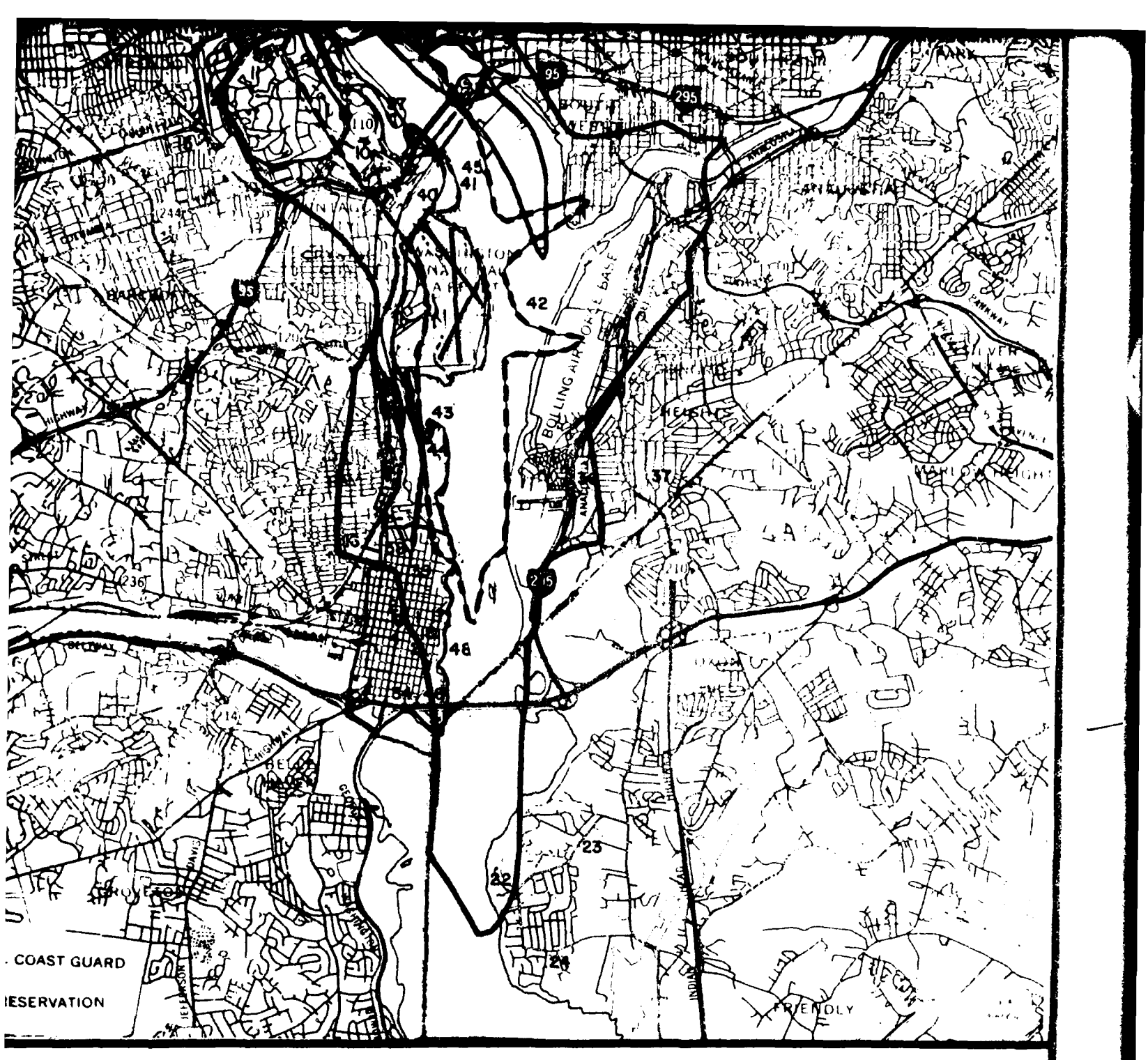
	Existing Conditions*	Controlled Activity**				Unconstrained Activity**				Controlled Activity, Modified**			
		No Widebody		w/Widebody		No Widebody		w/Widebody		No Widebody		w/Widebody*	
AIR CARRIER	May 1981	1981	1990	1981	1990	1981	1990	1981	1990	1981	1990	1981	1990
Operations per day:*													
2 Engine Narrow Body	224	223	558	230	294	246	676	240	362	270	589	230	294
3 Engine Narrow Body	316	335		228		350		292		352		228	
2 Engine Wide Body				14	264			14	314			14	264
3 Engine Wide Body				26				26				26	
Total Air Carrier Ops.	560	558	558	558	558	596	676	572	676	622	589	558	558

*Includes Extra Sections
**With Noise Restrictions


N
0'
SCALE
PARK
REEK
BOLLING AIR FORCE BASE
CAMPHUN
RAILROAD
HIGHWAY


N
0'
6000'
SCALE
PARK
BOLLING AIR FORCE BASE
95
295
595
42
43
45
41
40
46
6
47
37


95
295
45
41
40
42
BOLLING AIR FORCE BASE
43
37
16
CAMERON
236
RAILROAD
48
23
22
24
U.S. COAST GUARD
RESERVATION
FRIENDL



LEGEND

REPRESENTATIVE SENSITIVE SITES

21. ST. MARY'S CHURCH
22. FORT FOOTE PARK
23. FT. FOOTE BAPTIST CHURCH
24. INDIAN QUEEN SCHOOL
25. BROOKMONT SCHOOL
26. SIBLEY HOSPITAL
27. AMERICAN UNIVERSITY
28. ST. JOHN'S CHILD DEVELOPMENT CENTER
29. GEORGETOWN UNIVERSITY
30. WOODMONT SCHOOL
31. COLUMBIA HOSPITAL
32. LINCOLN MEMORIAL
33. JEFFERSON MEMORIAL
34. ST. MARY'S SCHOOL
35. SYPHAX SCHOOL
36. HADLEY HOSPITAL
37. ST. THOMAS MORE SCHOOL
38. GRAY HIGH SCHOOL
39. ST. JOSEPH'S SCHOOL

PARKS AND RECREATION AREAS

40. WATERFOWL SANCTUARY
41. GRAVELLY POINT PARK
42. POTOMAC RIVER
43. MARINA
44. DAINGERFIELD ISLAND
45. EAST POTOMAC PARK
46. JONES POINT PARK
47. WEST POTOMAC PARK
48. POTOMAC VIEW PARK
49. THE MALL
50. ROCK CREEK AND POTOMAC PARKWAY
51. C & O CANAL
52. ARCHIBOLD PARKWAY
53. POTOMAC PALISADES PARKWAY
54. GEORGE WASHINGTON MEMORIAL PARKWAY
55. ARLINGTON HOUSE
56. IWO JIMA MEMORIAL
57. LADY BIRD JOHNSON PARK
58. NORTHERN VIRGINIA REGIONAL PARK

LEGEND

——— Ldn 65
– – – Ldn 75

METROPOLITAN WASHINGTON AIRPORTS

FINAL SUPPLEMENT TO THE AUGUST 1980 ENVIRONMENTAL IMPACT STATEMENT

NATIONAL AIRPORT

1981 LDN CONTOURS

EXISTING CONDITIONS (BASE CASE)

FIGURE 1

TABLE III

NOISE IMPACT AT WASHINGTON NATIONAL AIRPORT

	Area (sq. mi.)*		Population*	
Existing Conditions (May 1981)	25		93,000	
	1981	1990	1981	1990
Controlled Activity**				
No Widebody Aircraft	26	4.9	97,000	1200
With Widebody Aircraft	24	4.9	97,000	1200
Unconstrained Activity**				
No Widebody Aircraft	28	5.0	102,000	1200
With Widebody Aircraft	24	4.9	97,000	1200
Controlled Activity, Modified**				
No Widebody Aircraft	27	4.9	102,000	1200
With Widebody Aircraft	24	4.9	97,000	1200

*Within Ldn 65 Contour
**With Noise Restrictions

of the Runway 18 threshold. The total area encompassed by the Ldn 65 contour is approximately 25 square miles, while the Ldn 75 contour covers about 5.7 square miles.

As presented in Table III, the present base case analysis estimates that 93,000 people (42,000 households) reside within the Ldn 65 (NEF 30 equivalent) noise exposure contour, and 6,000 people (2,950 households) reside within the Ldn 75 (NEF 40 equivalent) contour. These figures represent approximately a 30% increase over the number estimated within the equivalent contours in the August 1980 Environmental Impact Statement. Since the noise exposure contours are approximately the same size, the increase in affected population apparently is due to the use of a different demographic analysis procedure and revised data base.

It should be mentioned that the baseline noise impact contours reflect the use of a number of noise abatement measures presently employed at Washington National Airport:

* The scheduling of turbojet air carrier aircraft only during the period from 7:00 a.m. through 10:00 p.m.

* The limited number of scheduled air carrier and commuter operations each day—40 per hour for air carriers and 8 per hour for commuters.

* The prohibition on certain types of aircraft—specifically four-engine jet aircraft.

* Noise abatement operational procedures—thrust reductions after takeoff and reduced flaps on approach.

* The preferential approach and departure paths over the Potomac River corridors.

The noise abatement steps already taken at Washington National Airport have served to reduce noise impacts near the airport. As newer, less noisy aircraft come into service, and older fleets are modified to comply with Federal regulations, overall noise impacts will gradually be reduced. Nevertheless, there remains a noise problem under present conditions. There are residential areas, parks, historic, and institutional activities existing within the Ldn 65 contour. In addition, there are many residential areas outside the Ldn 65 contour where residents complain that the level of aircraft noise and frequency of overflight is intrusive and annoying.

In general, increasing levels of cumulative noise exposure result in increased annoyance in a larger percentage of the population. In other words, a greater percentage of the population will be annoyed when exposed to a cumulative noise level of Ldn 65 as compared to Ldn 60 or Ldn 55. Although Ldn 65 is normally considered acceptable, there will always be citizens who consider a cumulative noise level of less

than Ldn 65 as unacceptable. In any case, one should never conclude that the Ldn 65 contour represents a boundary outside of which no aircraft noise impacts occur. Many experts believe that noise impact information is best used to compare the relative differences in noise impact among the different policy alternatives, rather than attempting to determine what level of noise should be considered acceptable or unacceptable. In other words, noise contours are best used to compare the relative changes in levels of public annoyance which should result from policy or operating alternatives, rather than to predict the absolute level of annoyance associated with any given policy or operating procedure. It should be emphasized that noise impact contours are calculated and presented for average yearly operating conditions, in order to allow reliable and consistent comparisons. On any given day, actual noise impact contours may vary, depending on operating conditions (e.g.: wind direction and the associated direction of traffic movements). The relative changes in noise impact for each policy alternative as depicted by the noise model will also occur for areas farther from the airport and outside of the noise contours.

Impacts of Policy Alternatives[2]

The noise impacts of the various policy alternatives result from the combination of policy provisions, including aircraft scheduling restrictions, introduction of new technology aircraft, the amount of reduction of nighttime aircraft operations, and aircraft noise limitations.

For future conditions, 1986 and beyond, all air carrier aircraft operating at Washington National Airport are assumed to be new models or older models re-engined with new engines, in order to comply with the required noise limitation criterion of 80 dBA, as measured for

---

[2] The Metropolitan Washington Council of Governments (COG) and the FAA are engaged in a cooperative effort to evaluate and test alternative flight path configurations that may further reduce the impacts of aircraft noise on citizens in the Washington area. Through this effort, considerations will be given to changing existing flight paths and procedures. These tests of alternative flight paths have not been included in this analysis.

takeoff under conditions specified in 14 CFR 36. For the noise analysis, the following air carrier aircraft models are examples of those assumed to be capable of meeting this requirement:

DC-9-80

737-300

727-200 re-engined with two CFM-56 or similar engines

757

767

Note: This assumption does not imply any finding by the Administrator as to the approved use of these models at Washington National Airport. These models of aircraft are cited purely to illustrate the expected performance characteristics of aircraft for environmental analysis purposes.

The alternatives assessed for the near term (1981) and the longer term (1990) include:

* Controlled activity at Washington National Airport with noise restrictions.

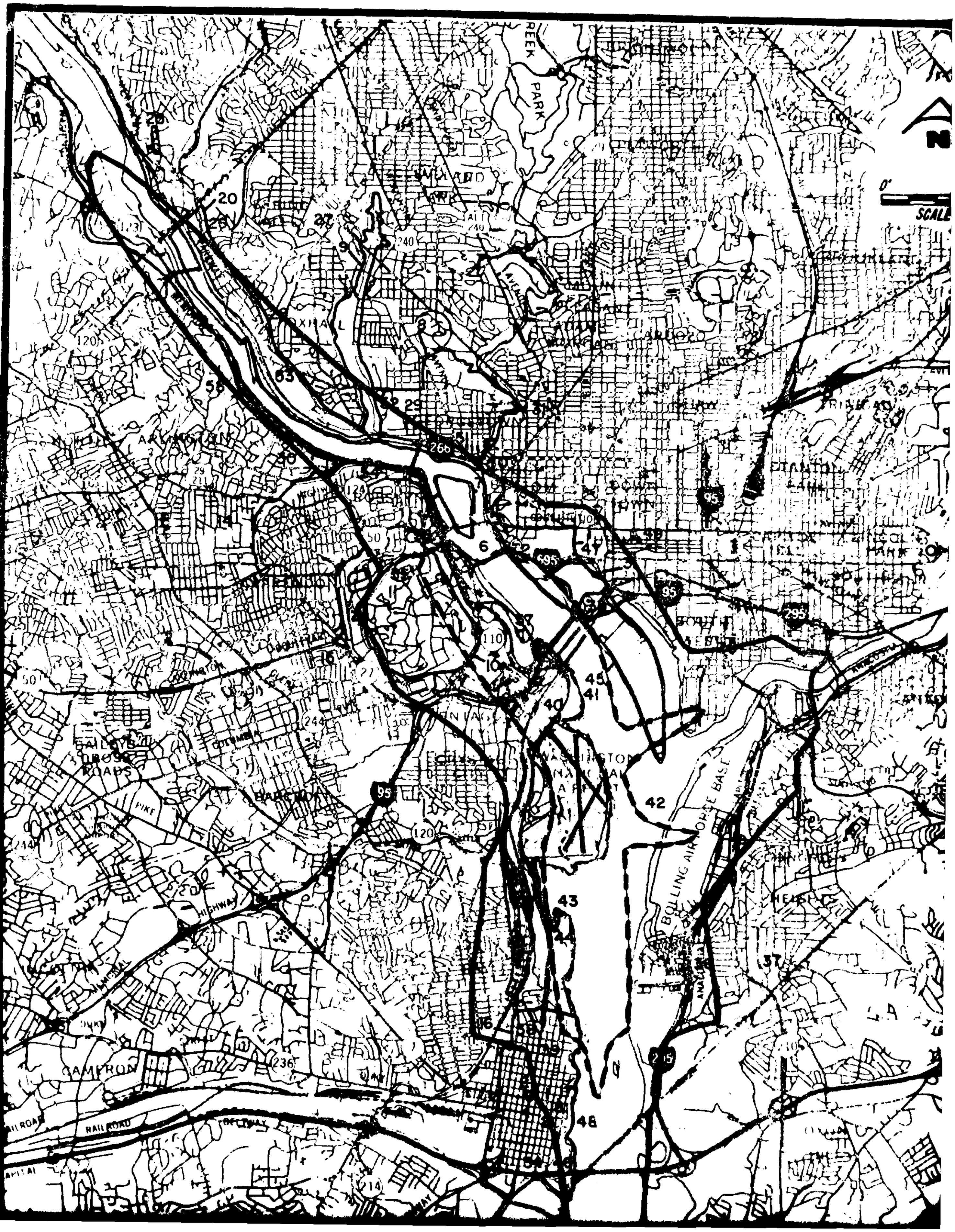
* Unconstrained activity at Washington National Airport with noise restrictions.

* Controlled activity at Washington National Airport with noise restrictions, modified by the September 10, 1981, House of Representatives amendment to the Fiscal Year 1982 DOT Appropriations Act.

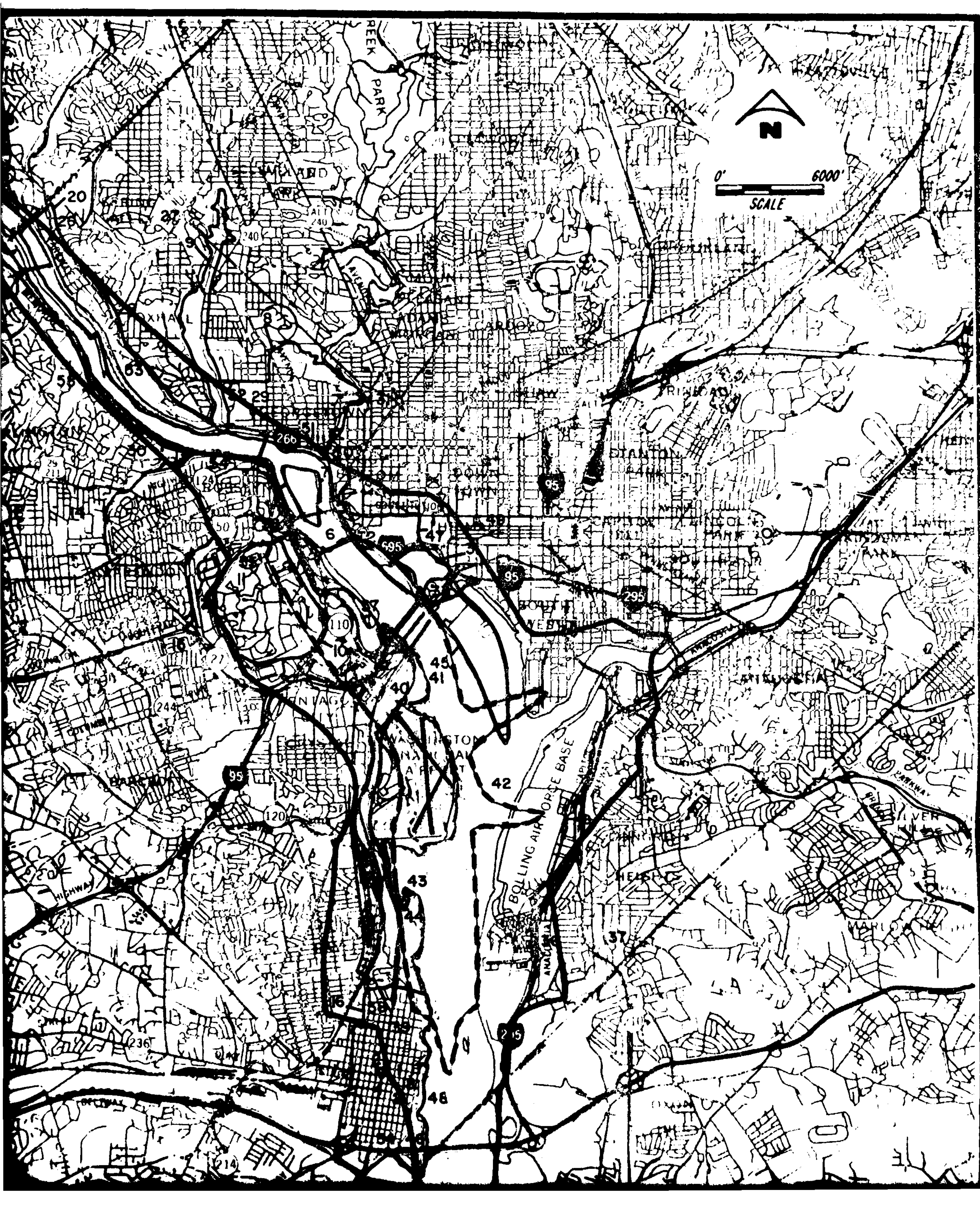
Both the near term and the longer term assessments considered the introduction of widebody aircraft and their exclusion.

Controlled Activity with Noise Restrictions, Near Term Impacts: Figure 2 shows the noise impact of imposing a limitation of 37 air carrier operations per hour from 7:00 a.m. through 9:59 p.m. with no widebody aircraft and with the noise restrictions shown in Table I. Since the actual May 1981 activity at Washington National Airport did not utilize all of the slots then available (40 per hour for 16 hours), the Controlled Activity alternative has slightly more impact than the May 1981 base case. There is a 4% increase in the population impacted between this policy alternative and the May 1981 base case. When widebody aircraft are included in this alternative, the area encompassed by the Ldn 65 contour decreases by approximately two square miles but includes about the same number of people as this alternative without widebody aircraft.

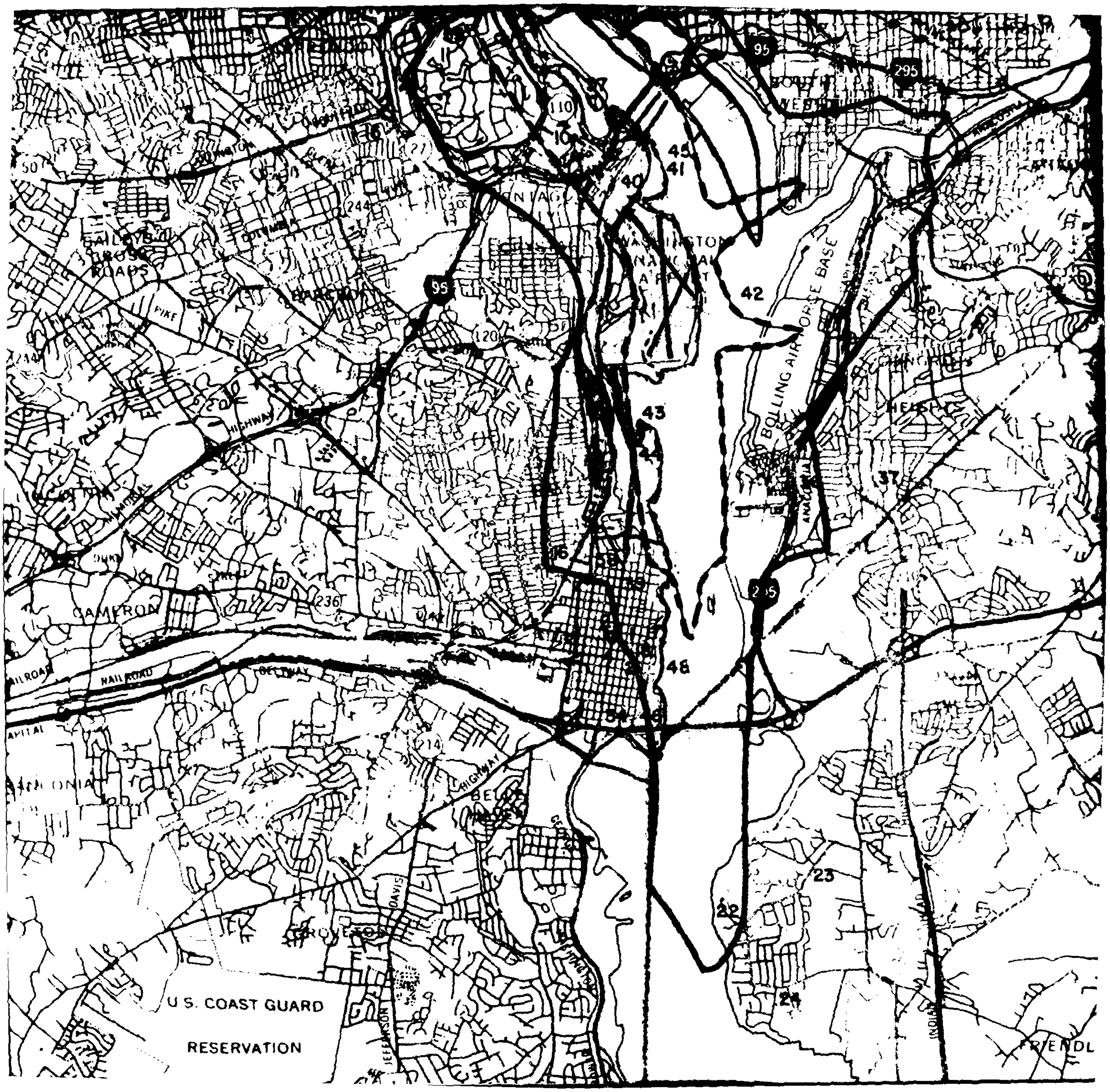
Unconstrained Activity with Noise Restrictions, Near Term Impacts: There is an increase in area and population (two square mile and about 5000 more people within the Ldn 65 contour) impacted for the October 1981 case with no scheduling limitations, no widebody aircraft



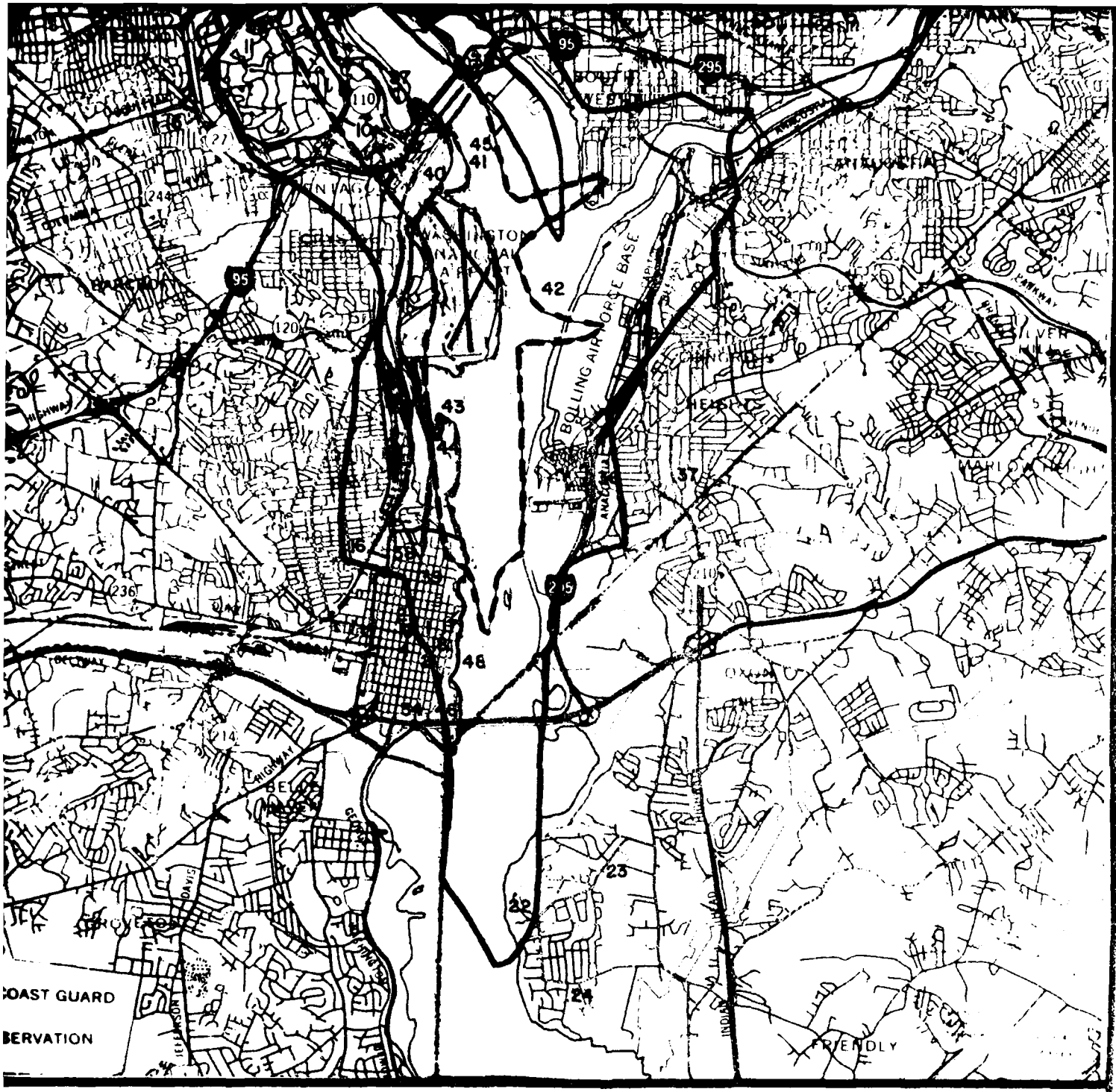
PARK
BOLLING AIR FORCE BASE
CAMERON
PIKE
HIGHWAY
RAILROAD
SCALE



N
0'
6000'
SCALE
PARK
BOLLING AIR FORCE BASE
42
43
45
41
40
48
37
6
20
95
295
266
110
120
240



95
295
110
45
41
40
42
43
44
46
37
23
22
24
244
120
236
214
BOLLING AIR FORCE BASE
CAMERON
RAILROAD
BELTWAY
HIGHWAY
PIKE
U.S. COAST GUARD
RESERVATION



LEGEND

REPRESENTATIVE SENSITIVE SITES

21. ST. MARY'S CHURCH
22. FORT FOOTE PARK
23. FT. FOOTE BAPTIST CHURCH
24. INDIAN QUEEN SCHOOL
25. BROOKMONT SCHOOL
26. SIBLEY HOSPITAL
27. AMERICAN UNIVERSITY
28. ST. JOHN'S CHILD DEVELOPMENT CENTER
29. GEORGETOWN UNIVERSITY
30. WOODMONT SCHOOL
31. COLUMBIA HOSPITAL
32. LINCOLN MEMORIAL
33. JEFFERSON MEMORIAL
34. ST. MARY'S SCHOOL
35. SYPHAX SCHOOL
36. HADLEY HOSPITAL
37. ST. THOMAS MORE SCHOOL
38. GRAY HIGH SCHOOL
39. ST. JOSEPH'S SCHOOL

PARKS AND RECREATION AREAS

40. WATERFOWL SANCTUARY
41. GRAVELLY POINT PARK
42. POTOMAC RIVER
43. MARINA
44. DAINGERFIELD ISLAND
45. EAST POTOMAC PARK
46. JONES POINT PARK
47. WEST POTOMAC PARK
48. POTOMAC VIEW PARK
49. THE MALL
50. ROCK CREEK AND POTOMAC PARKWAY
51. C & O CANAL
52. ARCHIBOLD PARKWAY
53. POTOMAC PALISADES PARKWAY
54. GEORGE WASHINGTON MEMORIAL PARKWAY
55. ARLINGTON HOUSE
56. IWO JIMA MEMORIAL
57. LADY BIRD JOHNSON PARK
58. NORTHERN VIRGINIA REGIONAL PARK

LEGEND

Ldn 65
Ldn 75

METROPOLITAN WASHINGTON AIRPORTS

FINAL SUPPLEMENT TO THE AUGUST 1980 ENVIRONMENTAL IMPACT STATEMENT

NATIONAL AIRPORT

1981 LDN CONTOURS

CONTROLLED ACTIVITY WITH NOISE RESTRICTIONS--NO WIDEBODY AIRCRAFT

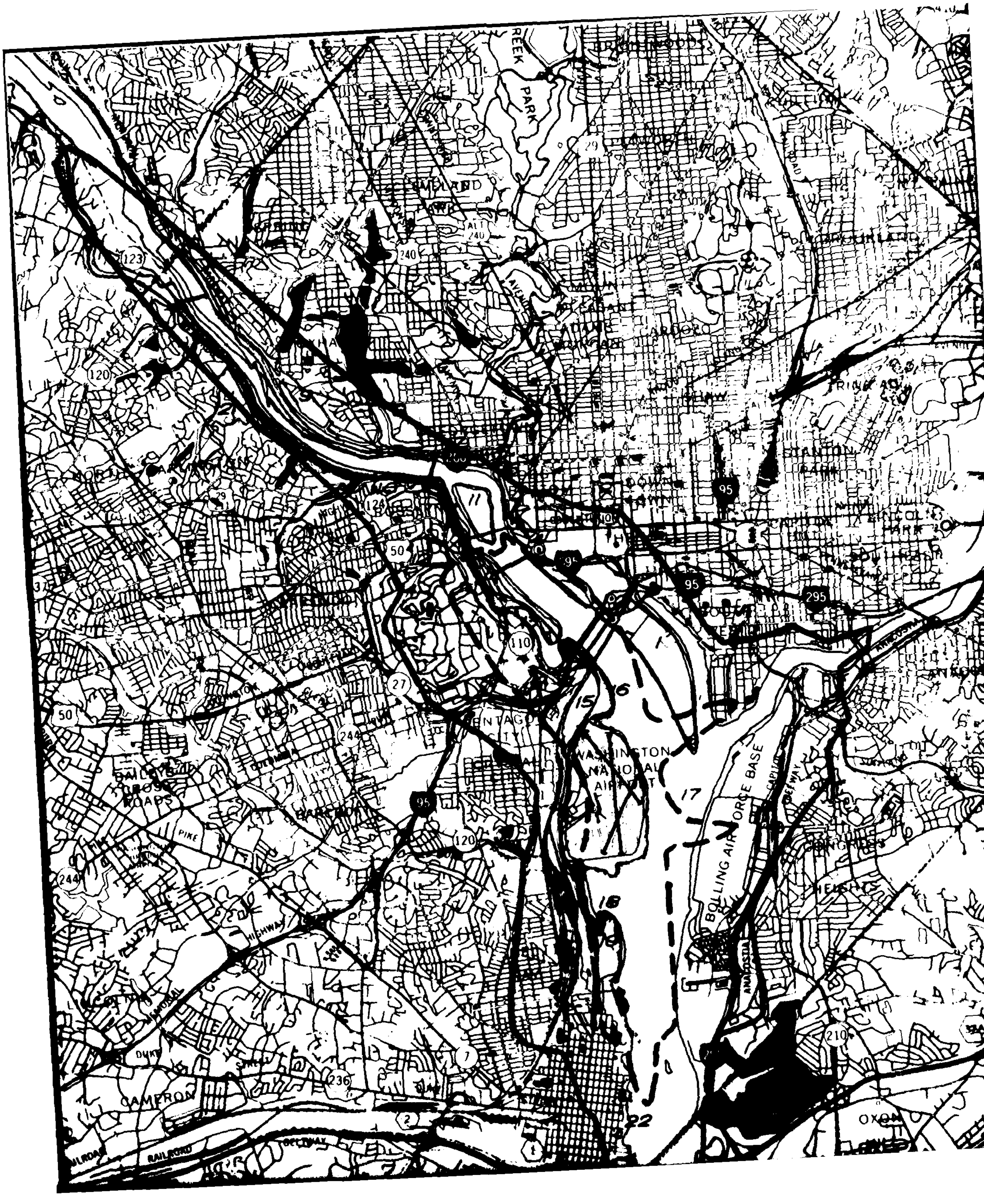
FIGURE 2

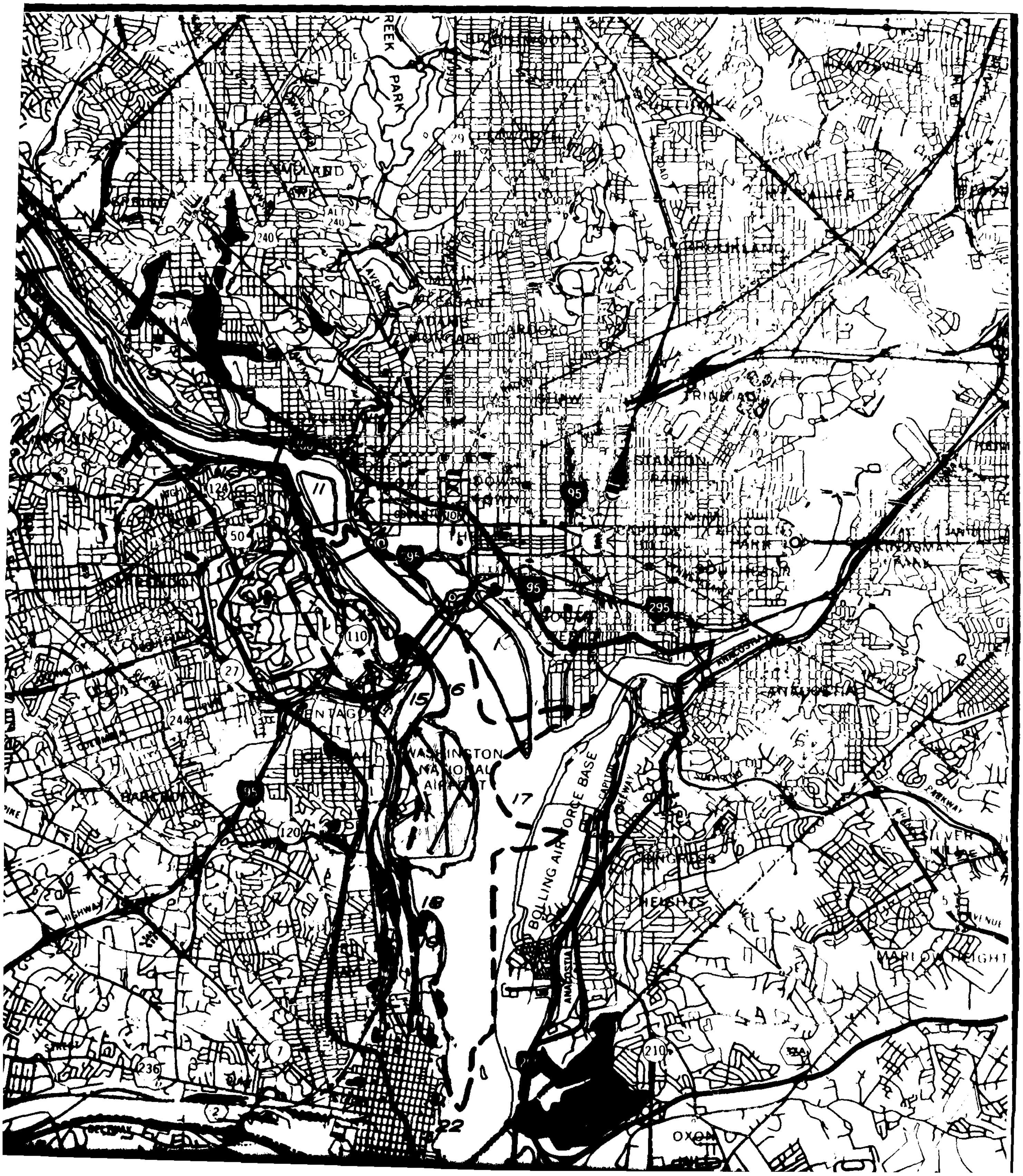
but with noise restrictions. Since there is no difference in the number of forecast operations between the Controlled Activity alternative with widebodies and the Unconstrained Activity alternative with widebodies, the noise impacts of these alternatives are the same.

Controlled Activity with Noise Reductions, Modified, Near Term Impacts: If the level of operations on Friday, July 31, 1981, were to be sustained throughtout the year, the areas and population impacted is approximately the same as the unconstrained case above. The Ldn 65 contour shown in Figure 3 encompasses 27 square miles within which 102,000 people reside.

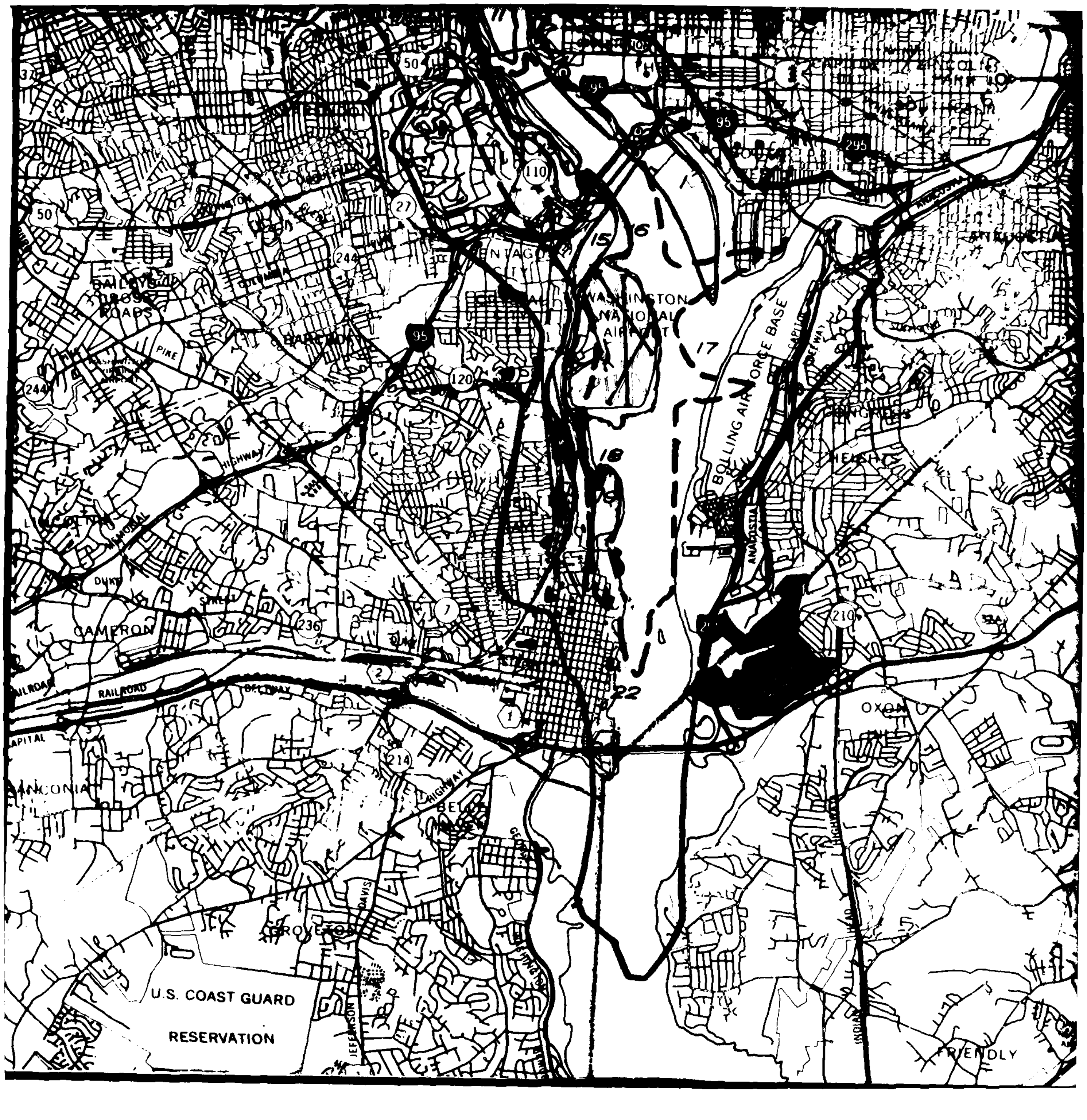
In summary, in the near term there will be no significant change in contour areas or population impacted upon implementation of an operating policy with or without the 37 per hour air carrier scheduling limitation, and with or without the introduction of widebody aircraft.

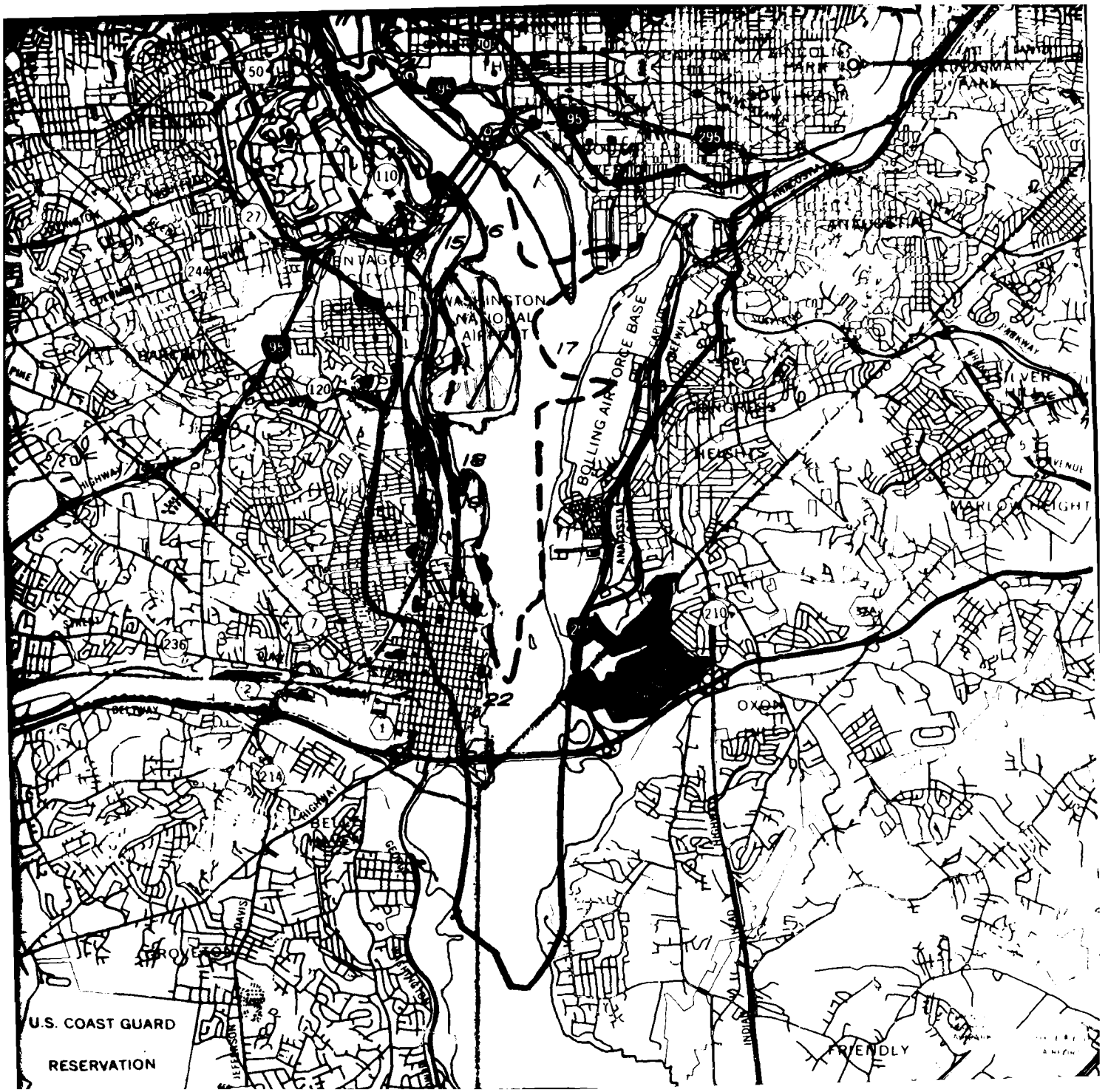
Controlled Activity with Noise Restrictions, Long Term Impact: The imposition on October 1, 1986, of the 80 dBA noise restriction for all aircraft operating at Washington National Airport during the period from 7:00 a.m. through 9:59 p.m. would change significantly the noise impact. The noise restriction would, in general, allow only new generation (or re-engined) aircraft to operate at Washington National Airport. These aircraft would replace the noisier aircraft currently in use. For example, the noise level from the new generation of 757, 767, and DC-9-80 aircraft are expected to be ten decibels quieter on takeoff than a 727. Most people will perceive the takeoff of one of these new generation aircraft as half as noisy as the 727 aircraft currently operating at Washington National Airport. Figure 4 shows that the 1990 Ldn 65 contour for the alternative of controlled activity with noise restrictions extends 2.4 miles northwest from the Runway 18


PARK
WASHINGTON
BOLLING AIR FORCE BASE
BAILEYS
ROADS
PIKE
HIGHWAY
CAMERON
RAILROAD
123
120
29
240
50
124
95
295
110
27
244
236
7
2
1
210
11
15
16
17
18
22



PARK
29
240
124
50
95
295
110
27
244
120
7
236
2
210
11
15
16
17
18
22
BOLLING AIR FORCE BASE
ANACOSTIA
HEIGHTS
OXON


WASHINGTON
NATIONAL
AIRPORT
BOLLING AIR FORCE BASE
CAMERON
RAILROAD
U.S. COAST GUARD
RESERVATION
FRIENDLY
15
16
17
18
22


U.S. COAST GUARD
RESERVATION
BOLLING AIR FORCE BASE
WASHINGTON
NATIONAL
AIRPORT
ANACOSTIA
MARLOW HEIGHTS
OXON
FRIENDLY
BELTWAY
15
16
17
18
22

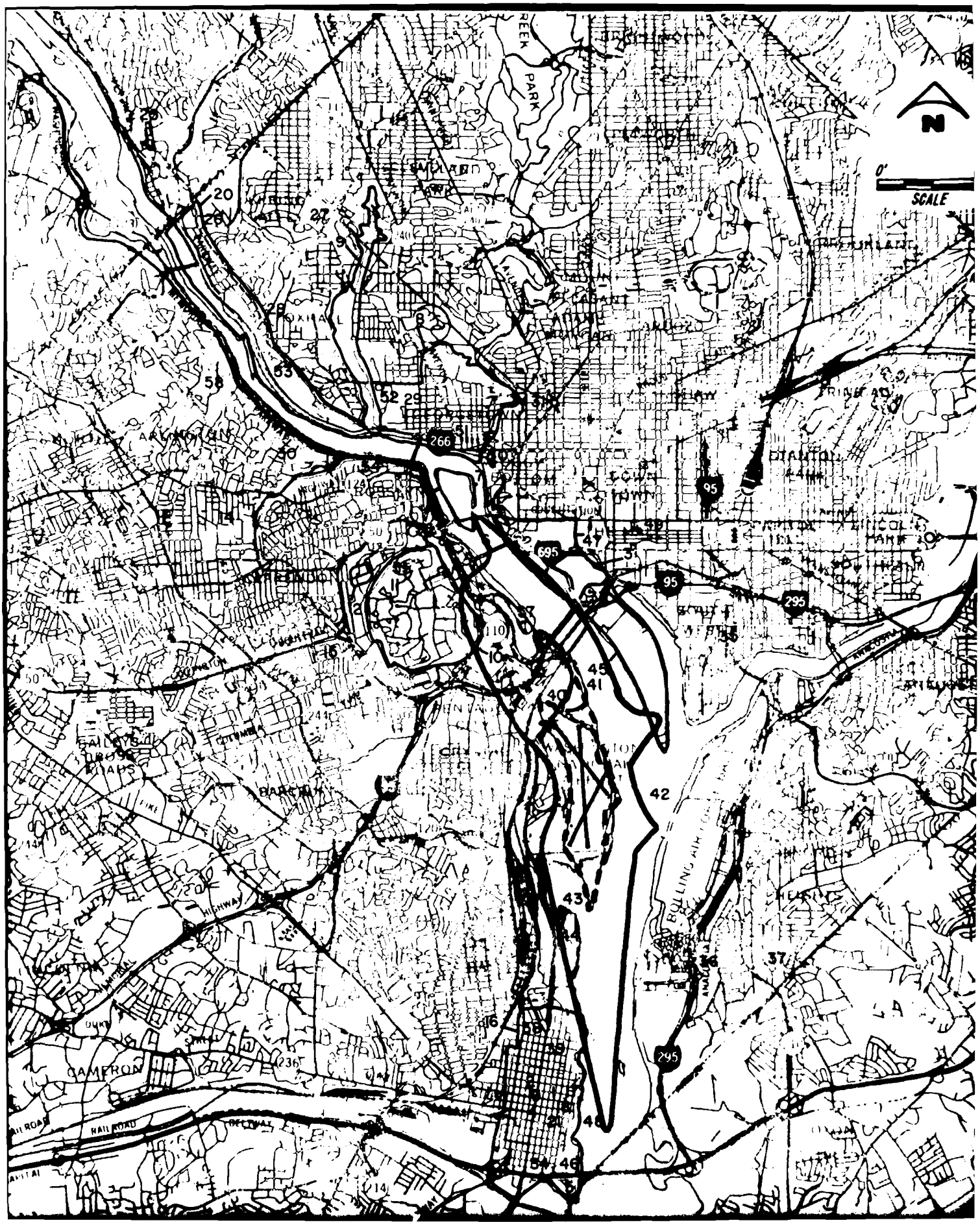
threshold and 3.0 miles south of the Runway 36 threshold, encompasses 4.9 square miles and impacts about 1,200 people (734 households). The smaller Ldn 75 contour extends about one-half mile up and down the river from the airport and does not impact any residences. The contours remain the same whether or not widebody aircraft are permitted to operate.

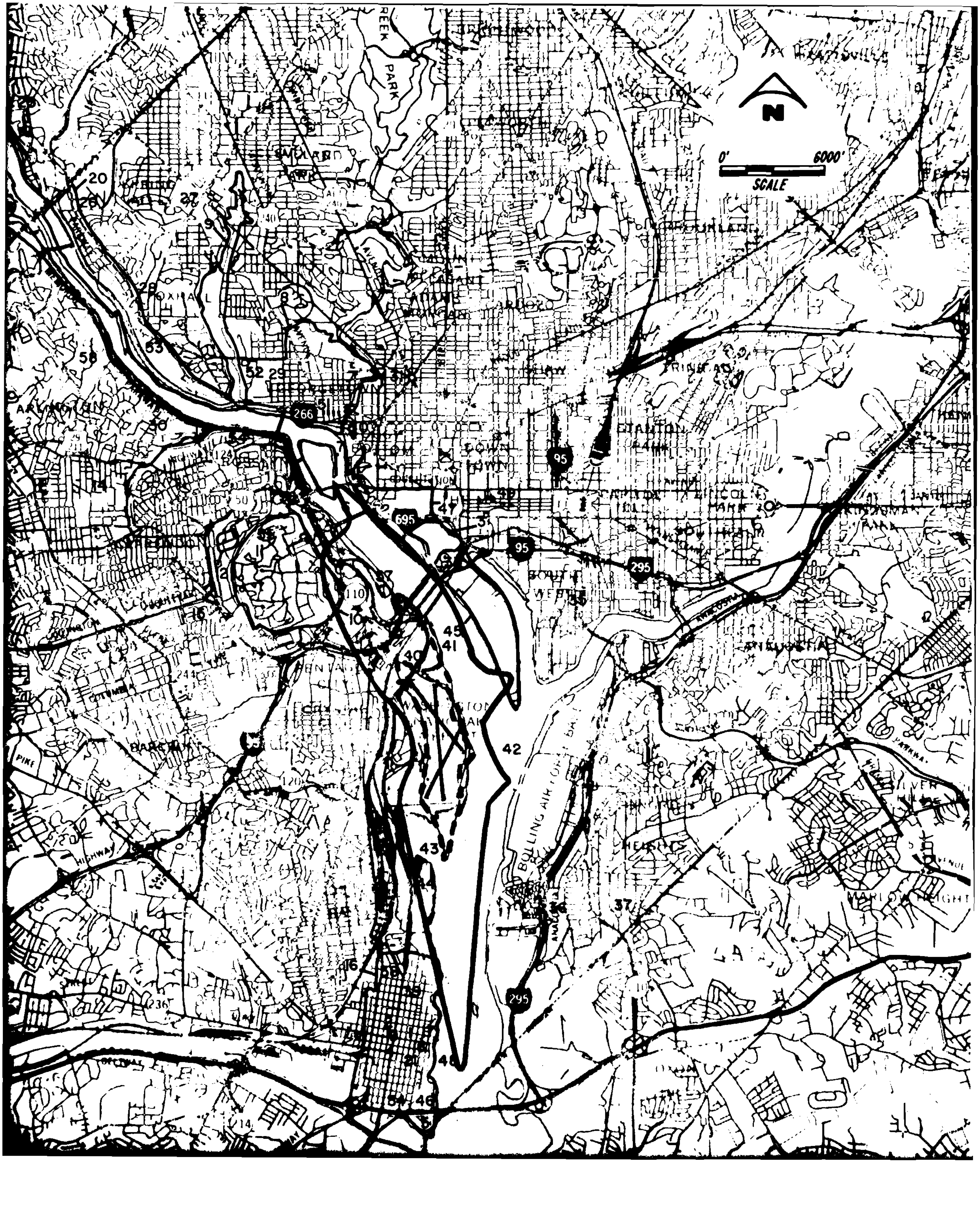
Unconstrained Activity with Noise Restrictions, Long Term Impact: This alternative would not significantly change the area, or the number of people within the Ldn 65 contour as compared with the controlled activity alternative. Table III summarizes the noise impact of all the alternatives assessed in this Supplement.

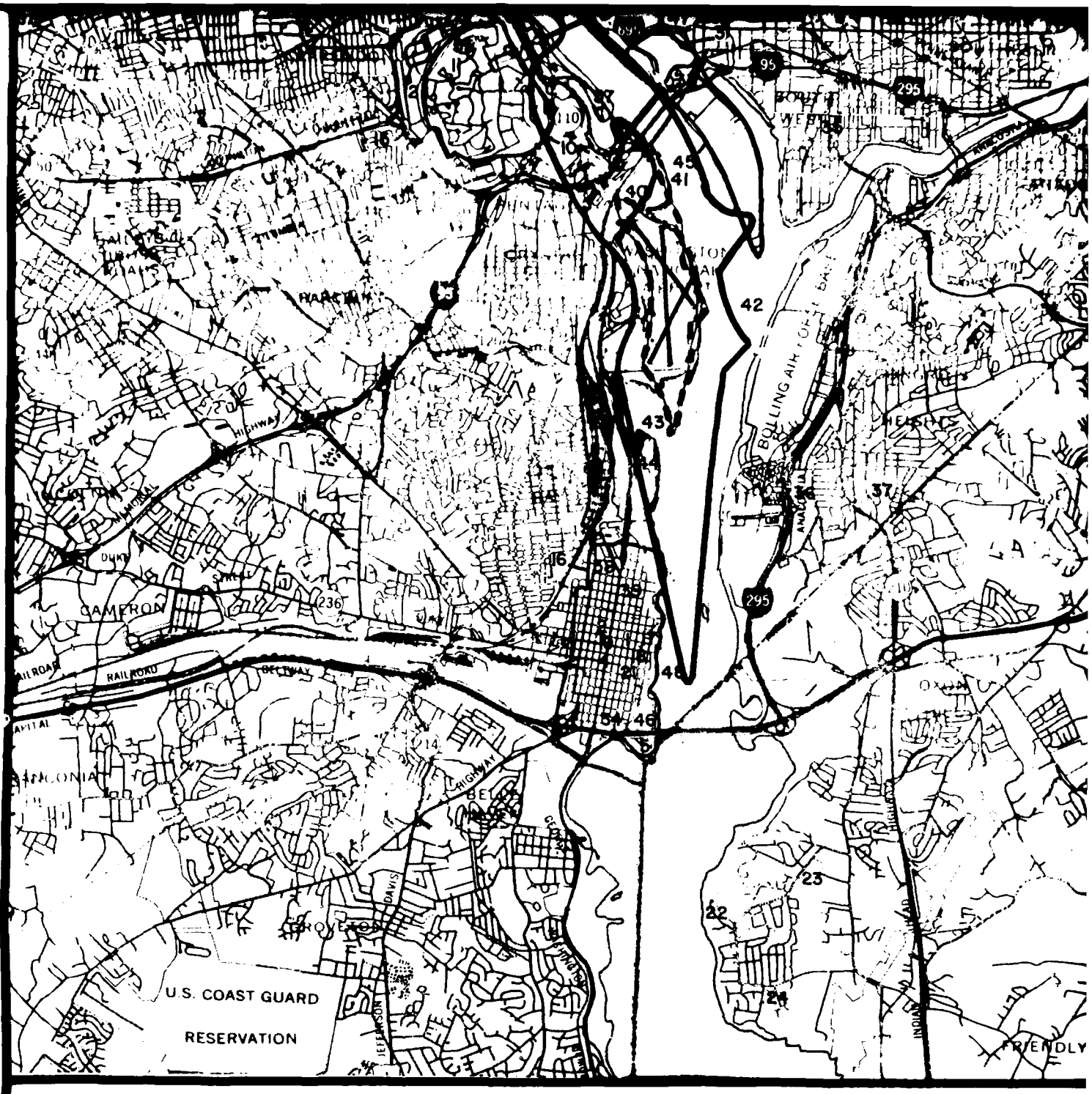
In summary, both the controlled activity and the unconstrained activity alternatives significantly reduce the number of people impacted within the Ldn 65 noise contour from 93,000 in 1981 to 1,200 by 1990.

NIGHTTIME NOISE LIMITATIONS

The August 1980 policy would have instituted a nighttime curfew on all aircraft departures from Washington National Airport between the hours of 10:30 p.m. and 7:00 a.m., and on all arrivals between 11:00 p.m. and 7:00 a.m. The decision to implement a curfew was based on a need to control the noise impacts associated with aircraft operations. The August 1980 Environmental Impact Statement predicted an improvement in the cumulative noise impact on the surrounding community due in part to the establishment of a curfew.


N
0'
SCALE
PARK
CREEK
ARLINGTON
266
95
695
295
CAMERON
RAILROAD
HIGHWAY


N
0'
6000'
SCALE
PARK
ARLINGTON
HIGHWAY
266
695
95
295
45
41
40
42
43
37



LEGEND

HISTORIC SITES

1. GADSBY'S TAVERN
2. LLOYD HOUSE
3. TIDAL BASIN
4. THE LYCEUM
5. JONES POINT LIGHTHOUSE
6. ARLINGTON MEMORIAL BRIDGE
7. THEODORE ROOSEVELT ISLAND
8. GEORGETOWN HISTORIC DISTRICT
9. GLOVER ARCHIBALD PARKWAY
10. ARLINGTON NATIONAL CEMETERY
11. ARLINGTON HOUSE and ROBERT E. LEE MEMORIAL
12. FT. MYER HISTORIC DISTRICT
13. DOUBLEDAY MANSION
14. THE SLEDGE
15. C. R. DREW HOUSE
16. ALEXANDRIA HISTORIC DISTRICT
17. BANK OF ALEXANDRIA
18. CARLYLE HOUSE
19. CHRIST CHURCH
20. POTOMAC GORGE and C & O CANAL

REPRESENTATIVE SENSITIVE SITES

21. ST. MARY'S CHURCH
22. FORT FOOTE PARK
23. FT. FOOTE BAPTIST CHURCH
24. INDIAN QUEEN SCHOOL
25. BROOKMONT SCHOOL
26. SIBLEY HOSPITAL
27. AMERICAN UNIVERSITY
28. ST. JOHN'S CHILD DEVELOPMENT CENTER
29. GEORGETOWN UNIVERSITY
30. WOODMONT SCHOOL
31. COLUMBIA HOSPITAL
32. LINCOLN MEMORIAL
33. JEFFERSON MEMORIAL
34. ST. MARY'S SCHOOL
35. SYPHAX SCHOOL
36. HADLEY HOSPITAL
37. ST. THOMAS MORE SCHOOL
38. GRAY HIGH SCHOOL
39. ST. JOSEPH'S SCHOOL

PARKS AND RECREATION AREAS

40. WATERFOWL SANCTUARY
41. GRAVELLY POINT PARK
42. POTOMAC RIVER
43. MARINA
44. DANGERFIELD ISLAND
45. EAST POTOMAC PARK
46. JONES POINT PARK
47. WEST POTOMAC PARK
48. POTOMAC VIEW PARK
49. THE MALL
50. ROCK CREEK AND POTOMAC PARKWAY
51. C & O CANAL
52. ARCHIBOLD PARKWAY
53. POTOMAC PALISADES PARKWAY
54. GEORGE WASHINGTON MEMORIAL PARKWAY
55. ARLINGTON HOUSE
56. IWO JIMA MEMORIAL
57. LADY BIRD JOHNSON PARK
58. NORTHERN VIRGINIA REGIONAL PARK

LEGEND

Ldn 65

Ldn 75

FIGURE 4

METROPOLITAN WASHINGTO

FINAL SUPPLEMENT TO THE

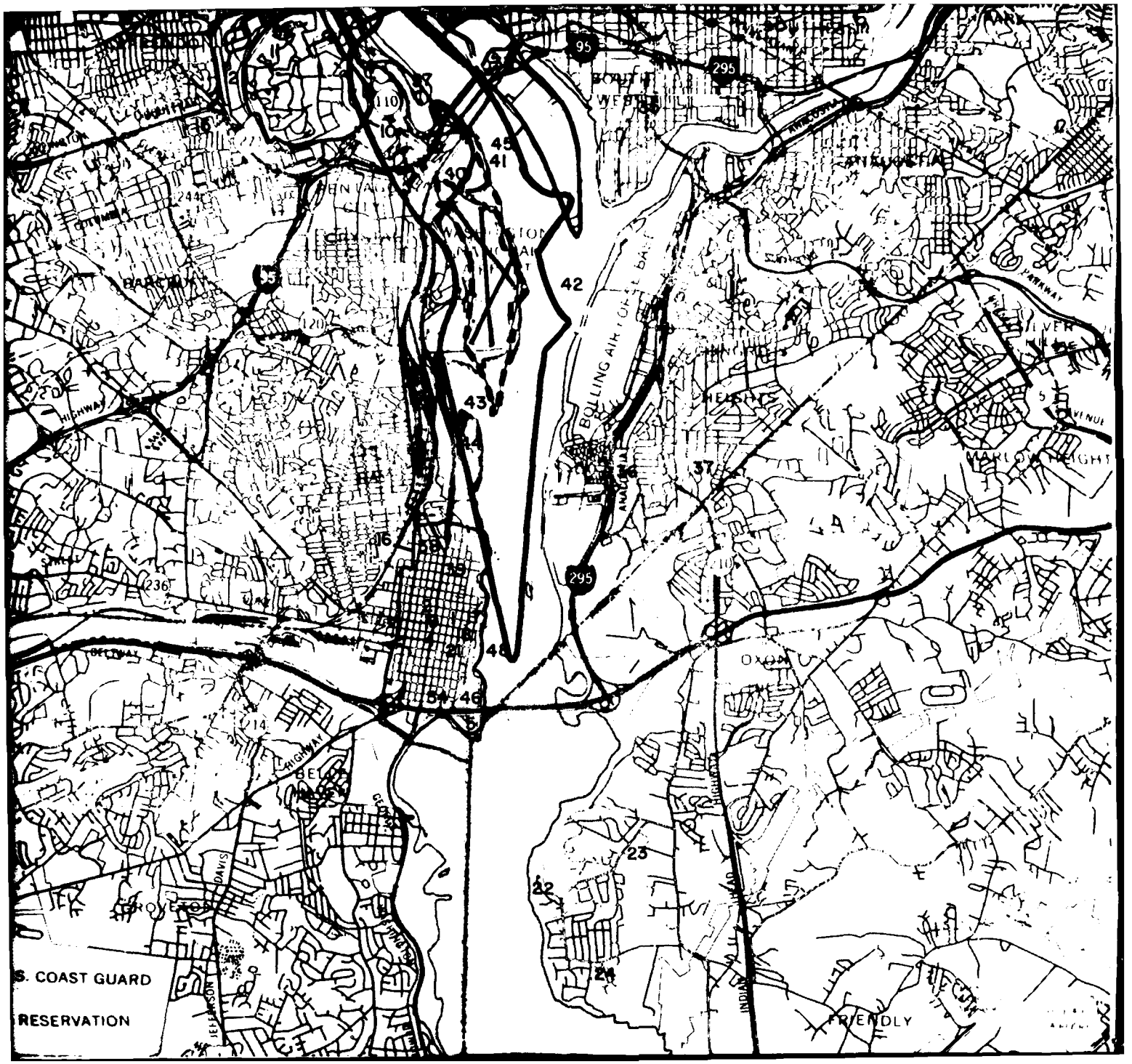
ENVIRONMENTAL IMPACT

NATIONAL AIRPO

1990 LDN CONTOU

CONTROLLED ACTIVITY

RESTRICTIONS--80 dBA SING


S. COAST GUARD
RESERVATION
BOLLING AIR FORCE BASE
FRIENDLY

Many commenters on the curfew portion of the August 1980 policy urged that, in lieu of closing Washington National Airport to all traffic, smaller aircraft that are substantially quieter should be permitted to operate past the 10:30 or 11:00 p.m. closing hours. In response to these comments, the Secretary directed the FAA to analyze further the curfew and, if appropriate, to propose a modification of the curfew.

Three alternative approaches to the curfew are assessed in this Final Supplement:

1. Prohibit all aircraft departures including General Aviation (GA) from 10:30 p.m. through 6:59 a.m., and all aircraft arrivals from 11:00 p.m. through 6:59 a.m. Under the regulations issued to implement the August 1980 policy, this curfew would become effective on October 26, 1981.

2. Amend the regulations to prohibit air carrier and general aviation jet operations only, and impose no restrictions on propeller-driven aircraft activity at Washington National Airport during the nighttime hours. This would closely resemble the current operating policy. At present, general aviation activity is unrestricted at night except that the operators of jet aircraft are requested not to operate after 11:00 p.m. and before 7:00 a.m. Under this alternative, the jet restriction would be regulatory, not voluntary.

3. Amend the regulations to adopt a nighttime noise limitation on aircraft, that would allow no significant increase in the cumulative noise over that which would result from the August 1980 policy (Alternative 1), and which would not cause undue intrusions upon residents during nighttime hours. Only aircraft that can meet the limitations when flown under FAA noise certification conditions would be allowed to operate.

Discussion of Alternatives

1. The long range environmental effects of a nighttime curfew on all aircraft are discussed in the August 1980 Environmental Impact Statement issued on the policy.

2. To examine the environmental impact of maintaining the current policy with respect to general aviation night operations (Alternative 2), operational and noise data were obtained on four typical nights in the month of October 1980. These data show an average of 52 general aviation operations (including an average of 14 helicopter operations) at Washington National Airport between the hours of 10:00 p.m. and 7:00 a.m. This is an average of six per hour. There was an average of 1.75 general aviation jet operations per night due to the voluntary "curfew." Table IV contains a summary of these operations.

TABLE IV

GENERAL AVIATION NIGHTTIME OPERATIONS

WASHINGTON NATIONAL AIRPORT
2200-0700 - October 1980

Aircraft Type	Number of Operations				Noise Level** (dBA)	
	Oct. 2	Oct. 21	Oct. 28	Oct. 29	Takeoff	Approach
Piper Navajo	11	13	11	12	74.0/71.0*	77.0/76.0*
Piper Aztec	4	9	4	5	69.0	74.0
Beech 99	7	4	3	5	66.0	74.0
Beech 100	1				62.0	74.0
Cessna 310	2	2	3	1	71.0	75.0
Nord 262	1	2	2	2	78.3	88.0
NAMC YS-11	1		2	2	81.0	90.0
Piper Senneca	1		1	3	67.0	73.0
Smith Aerostor 600	3	3		2	70.0	75.0
Shorts SD3-30	2		2	2	76.0	85.0
Falcon Fan Jet	1	1		1	67.6	86.2
Cessna 500 Jet	1				61.1	77.4
Gulfstream II Jet	1				80.1	91.1
Lear 35 Jet	1			2	72.0	83.1
Lear 25 Jet			2		79.7	88.2
Cessna 402		4	2		69.0	75.0
Mitsubishi MU-2		2			66.0	76.0
Beech Baron		2			67.0	75.0
Cessna 421			2		62.0	75.0
Fixed Wing Subtotal	37	42	34	37	Avg. 38	
Helicopter	5	20	14	19		
Total	42	62	48	56	Avg. 52	

*The PA-31-350 Navajo at 7000 # T.O.G.W. is 74.0 dBA whereas the PA-31-310 at 6500 # T.O.G.W. is 71.0 dBA.

**The noise levels were estimated for each airplane as they might occur during type certification tests conducted under Appendices A, B, and C of FAR Part 36. The levels are listed in Advisory Circular 36-3A issued June 11, 1980, entitled "Estimated Airplane Noise Levels in A-Weighted Decibels."

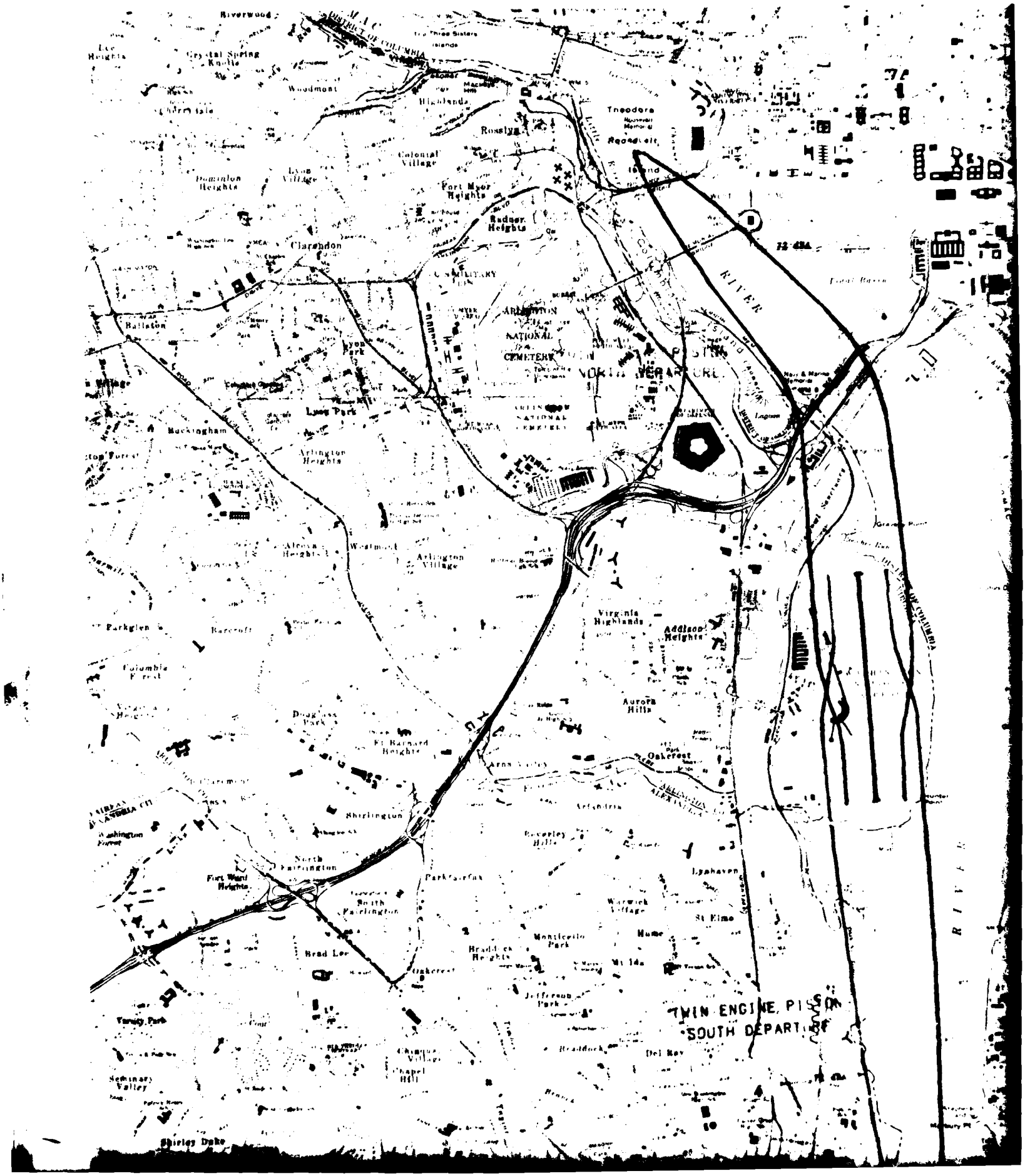
If these operations occurred in the daytime, they would have no measurable effect on the cumulative noise contours. Due to the nighttime weighting penalty (10 decibels) included in the Ldn metric, these relatively few general aviation nighttime operations will cause the Ldn 65 noise contour to cover slightly more area than if a complete curfew were imposed on all night operations. Since the population density in this area is high, a slight increase in area means a significant number of people would be impacted, or more accurately, would remain impacted. In addition, the single event noise levels of certain louder general aviation aircraft operations at night also intrude into residential areas.

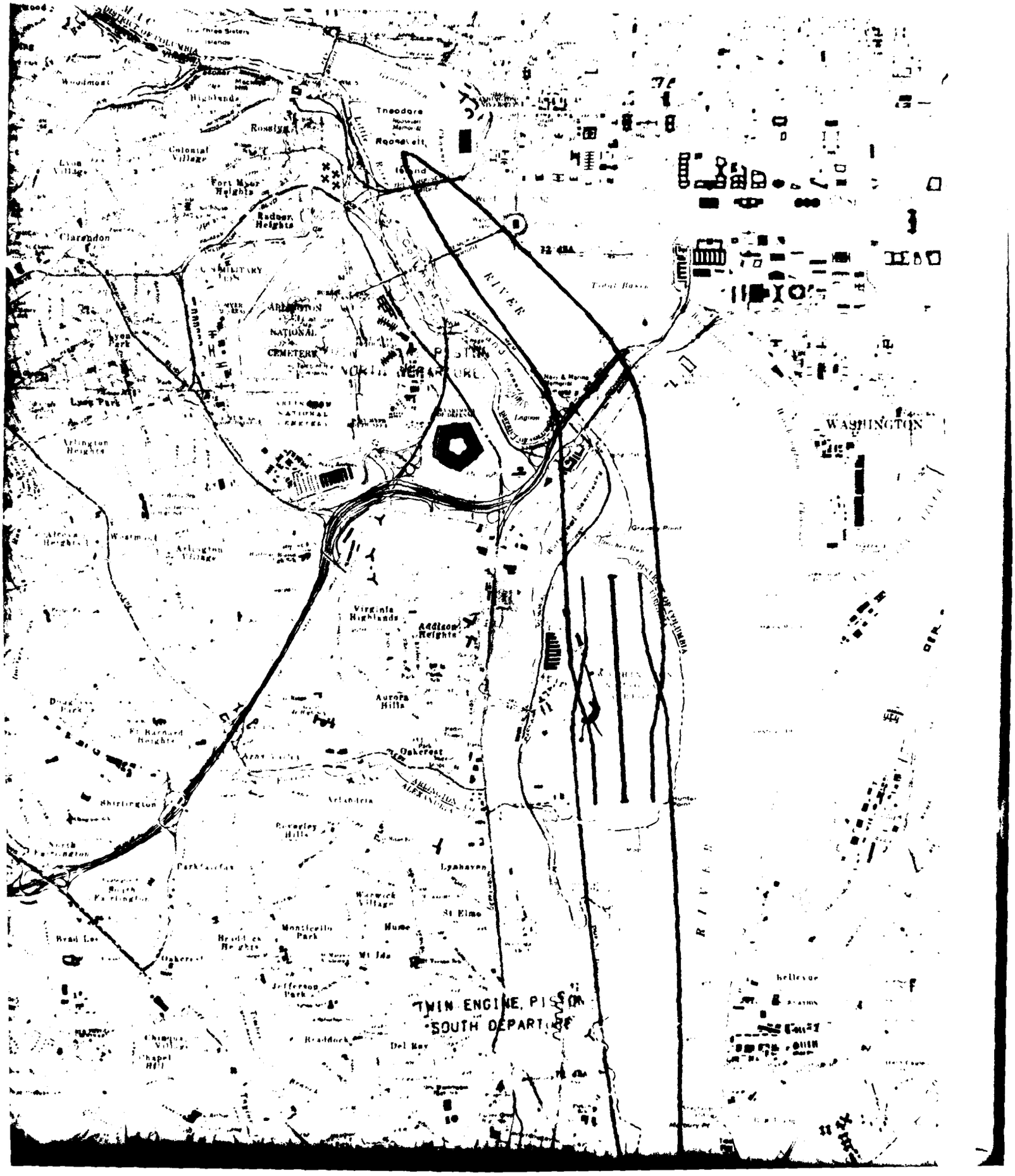
3. In order to achieve the goal of Alternative 3 of not altering the predicted cumulative noise exposure contours, a sufficiently low noise limitation is necessary that would, in effect, offset the 10 dB penalty imposed on night aircraft operations in calculating Ldn.

Since the takeoff noise level of many of the two-engine air carrier jet aircraft which operate daily at National is at least 82 dBA at 6,500 meters from start of takeoff roll (the FAR Part 36, Appendix C takeoff measurement point), aircraft with a takeoff noise level 10 decibels lower, or 72 dBA at the FAR 36 measuring point, would not measurably increase the

Ldn noise contours if operated at Washington National Airport during the nighttime hours. The noise energy from approximately 600 air carrier jet aircraft operations (including over 300 Boeing 727 operations at noise levels several decibels higher than 82 dBA) would dominate, thus causing the impact of around 50 night operations limited to 72 dBA to be insignificant. This conclusion would remain valid even if the number of night operations were doubled.

Since aircraft measuring 72 dBA at the takeoff noise measurement point would not measurably increase the cumulative noise level, this noise level was examined to determine the single event impact of such aircraft and to determine if it would intrude into residences during the night. Figures 5 and 6 show the 72 dBA single-event contours of a typical airplane with a maximum noise level of 72 dBA at 6,500 meters from start to takeoff role as tested under standardized FAR 36 conditions. If the aircraft flies over the center of the Potomac River or up the Anacostia River, the 72 dBA single-event contour does not reach any residential area. Assuming a 15-20 decibel attenuation of sound through a typical residential structure, people inside their homes just outside the contour would be exposed to approximately 50-55 dBA. As can be seen from Table V, which describes typical values of noise level commonly experienced by people, this is below the level which would interfere with most activity, including sleep. Tests have shown that about 10 percent of people sleeping in a laboratory environment who were exposed to a noise level of 50 dBA were awakened.


Riverwood
Crystal Spring Knolls
Woodmont
Highlands
Theodore Roosevelt Memorial
Roosevelt Island
Rosslyn
Colonial Village
Dominion Heights
Lyon Village
Fort Myer Heights
Radnor Heights
Clarendon
Ballston
Lyon Park
Buckingham
Arlington Heights
Arlington Village
Parkglen
Barcroft
Columbia Forest
Douglass Park
Ft Barnard Heights
Oakcrest
Aurora Hills
Virginia Highlands
Addison Heights
Arlington
Fort Ward Heights
North Fairlington
South Fairlington
Parkfairfax
Beverley Hills
Lynhaven
Warwick Village
St Elmo
Mt Ida
Monticello Park
Braddock Heights
Jeffersons Park
Braddock
Del Ray
Brad Lee
Oakcrest
Tansy Park
Seminary Valley
Chapel Hill
Shirley Duke
ARLINGTON NATIONAL CEMETERY
GREENMOUNT CEMETERY
RIVER
TWIN ENGINE, PISTON
SOUTH DEPARTURE


Theodore Roosevelt Memorial
Roosevelt Island
Rosslyn
Highlands
Colonial Village
Fort Myer Heights
Radnor Heights
Clarendon
MILITARY ROAD
ARLINGTON NATIONAL CEMETERY
POTOMAC RIVER
Tidal Basin
Lagoon
WASHINGTON
Lyon Park
Arlington Heights
Arlington Village
Virginia Highlands
Addison Heights
Aurora Hills
Oakcrest
Arlington
Buckingham
Lyonhaven
Warwick Village
St Elmo
Mount Ida
Jefferson Park
Del Ray
Hollywood
TWIN ENGINE, PI
SOUTH DEPART

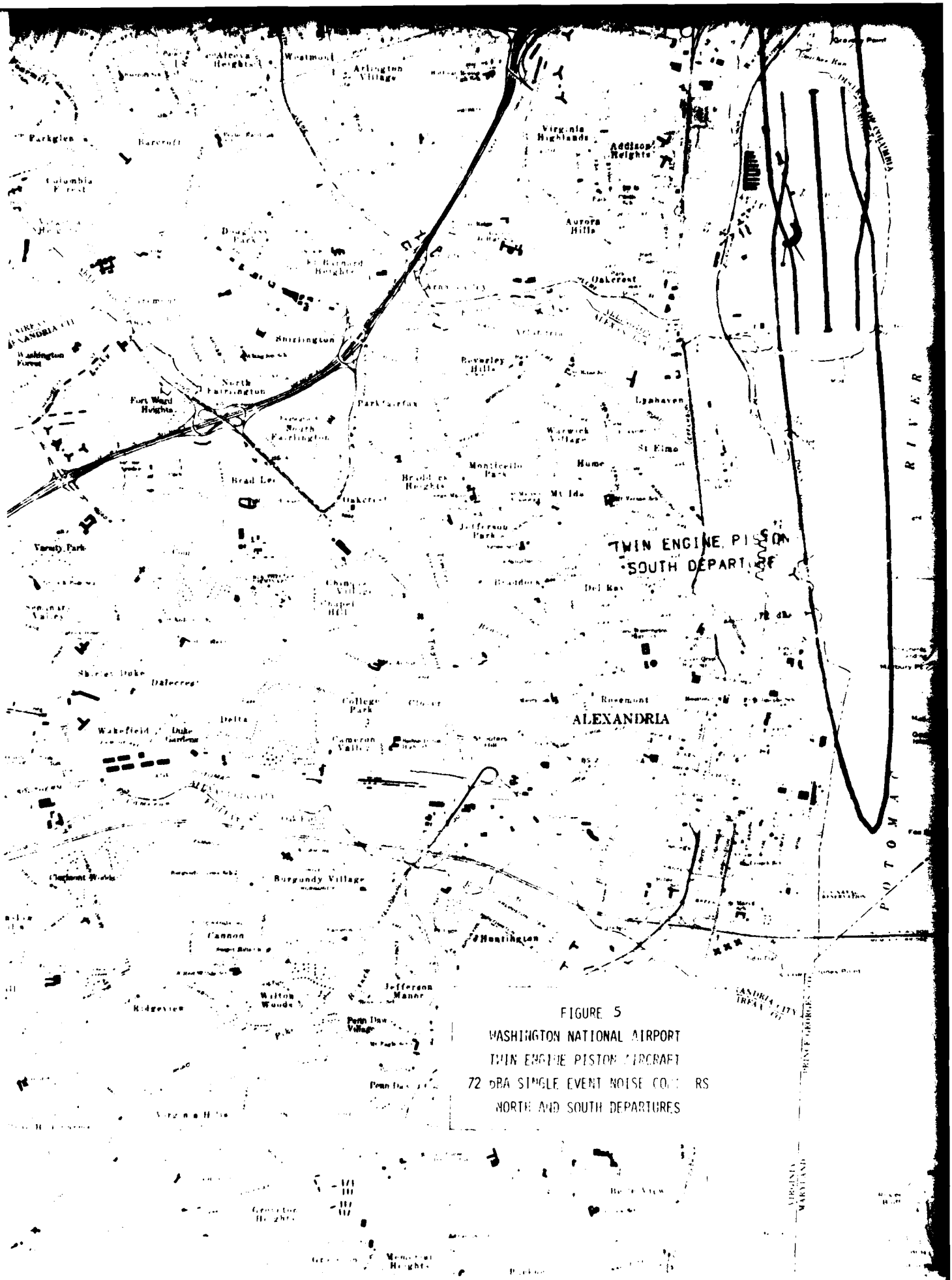


FIGURE 5
WASHINGTON NATIONAL AIRPORT
TWIN ENGINE PISTON AIRCRAFT
72 dBA SINGLE EVENT NOISE CONTOURS
NORTH AND SOUTH DEPARTURES

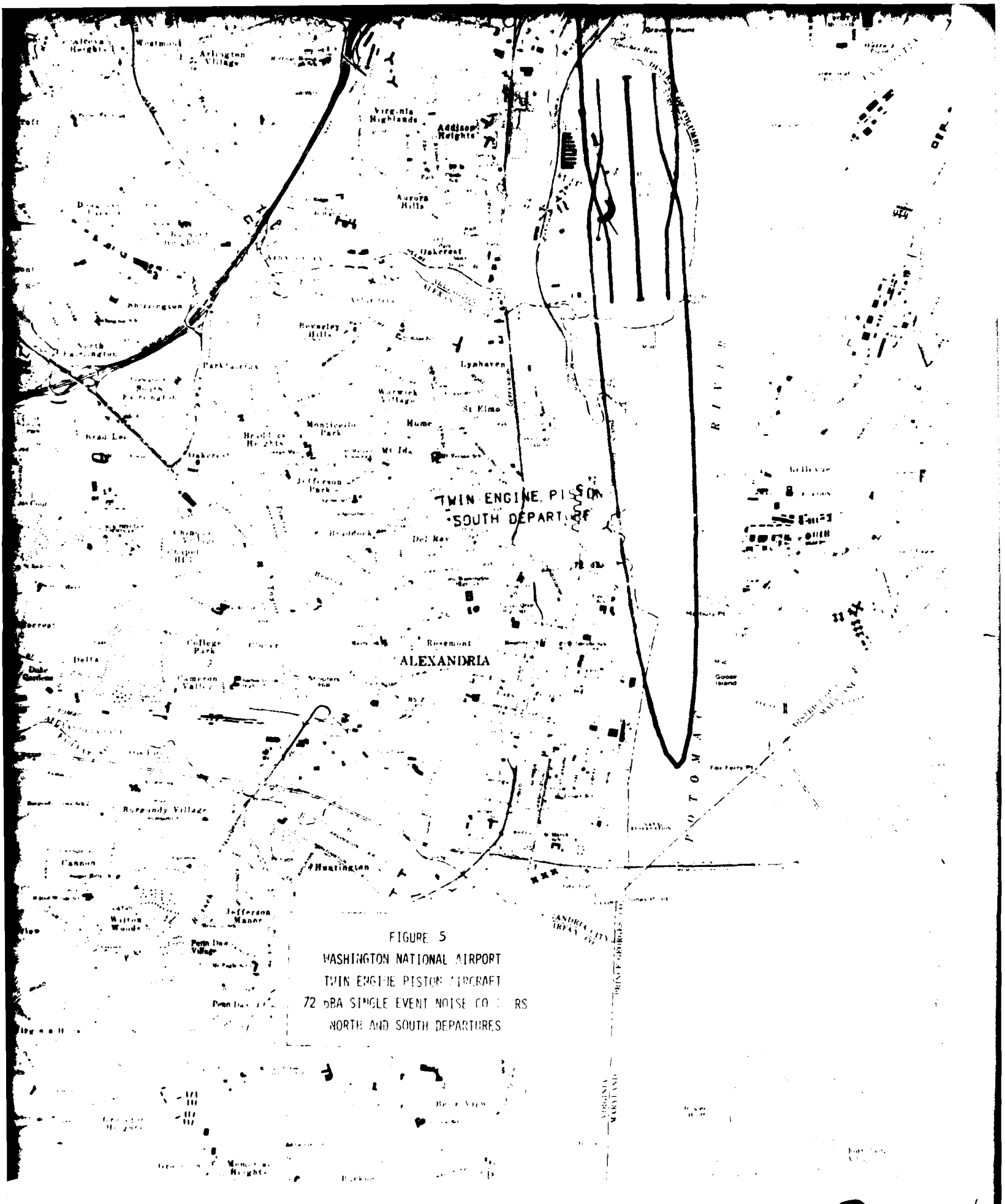


FIGURE 5
WASHINGTON NATIONAL AIRPORT
TWIN ENGINE PISTON AIRCRAFT
72 dBA SINGLE EVENT NOISE CONTOURS
NORTH AND SOUTH DEPARTURES

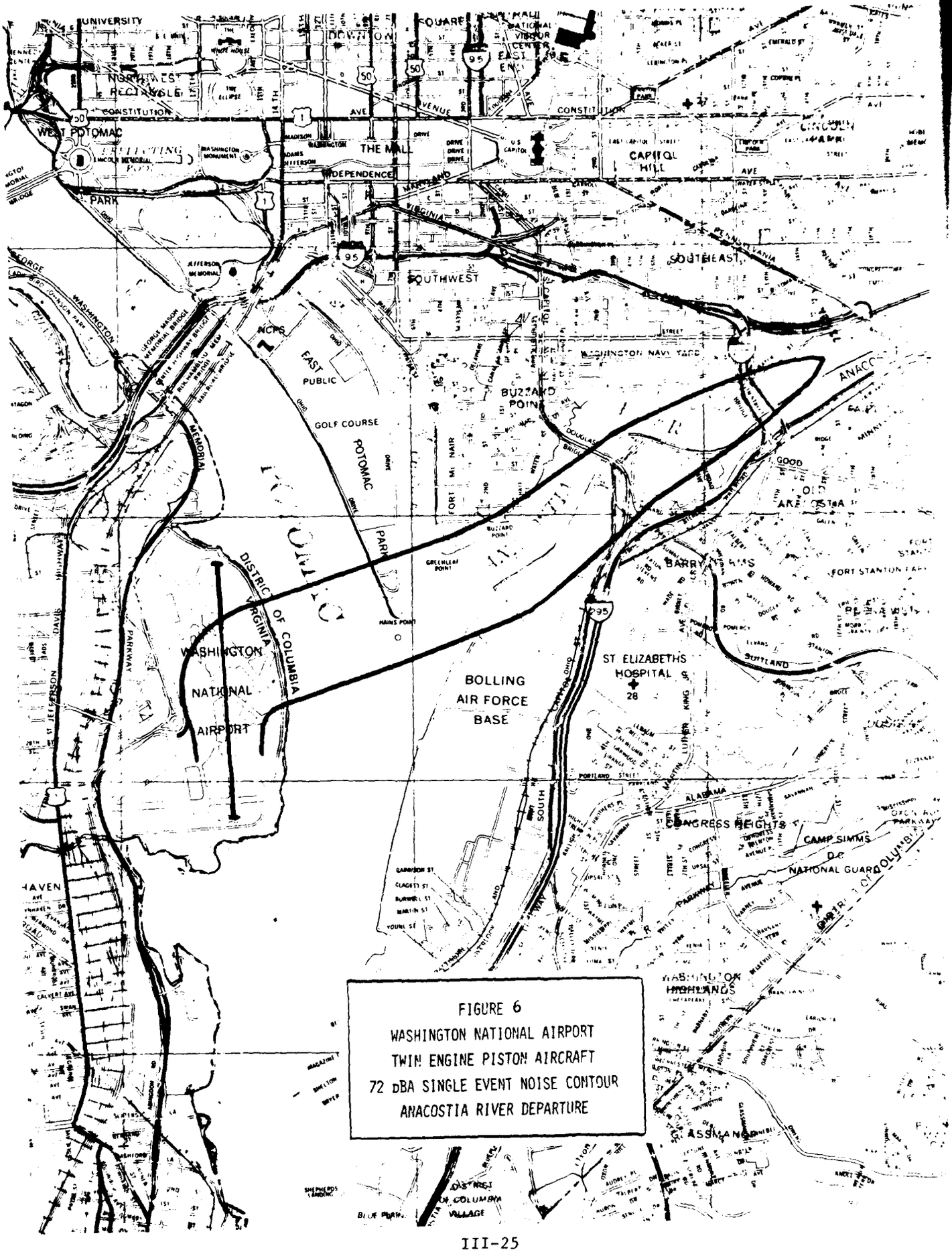


FIGURE 6
WASHINGTON NATIONAL AIRPORT
TWIN ENGINE PISTON AIRCRAFT
72 dBA SINGLE EVENT NOISE CONTOUR
ANACOSTIA RIVER DEPARTURE

TABLE V

COMPARATIVE NOISE LEVELS

Typical Decibel (dBA) Values Encountered in Daily Life and Industry

	dBA
Rustling leaves	20
Room in a quiet dwelling at midnight	32
Soft whispers at 5 feet	34
Average residence	50
Men's clothing department of large store	53
Window air conditioner	55
Conversational speech	60
Household department of large store	62
Busy restaurant	65
Typing pool (9 typewriters in use)	65
Vacuum cleaner in private residence (at 10 feet)	69
Ringing alarm clock (at 2 feet)	80
Loudly reproduced orchestral music in large room	82

Over 85 dBA, Beginning of Hearing Damage if Prolonged

Printing press plant (medium size automatic)	86
Heavy city traffic	92
Heavy diesel-propelled vehicle (about 25 feet away)	92
Air grinder	95
Cut-off saw	97
Home lawn mower	98
Turbine condenser	98
150 cubic foot air compressor	100
Banging of steel plate	104
Air hammer	107
Jet airliner (500 feet overhead)	115

Most residences have ambient noise levels that are higher than might be expected in a laboratory. Due to this higher background noise level, fewer than 10 percent of those exposed to 50-55 dBA from the aircraft would be expected to be awakened. Of course, at distances farther from the flight track, single-event noise levels will be even lower so that there would be even less intrusion into households.

A takeoff noise limit of 72 dBA would allow the aircraft listed in Table VI, including some newer technology jet aircraft, to operate at Washington National Airport throughout the night. Table VII contains the balance of the aircraft fleet for which FAA has estimated dBA levels. The aircraft in Table VII exceed the 72 dBA noise level and would not be permitted to depart from Washington National Airport during nighttime hours. Several of the aircraft which currently operate at Washington National during the night (Table IV) will be excluded by this alternative. The noise levels were estimated for each airplane as they might occur during type certification tests conducted under Appendices A, B, and C of FAR Part 36, Amendment 8. However, it should be specifically noted that the reported levels are estimates and do not represent actual certified values. This is because certification data are reported to the FAA in units of Effective Perceived Noise Level (EPNdB) for large transport category airplanes and turbojet powered aircraft. Where possible, the dBA values were estimated from certification data. Propeller-driven aircraft below 12,500 pounds gross weight are certificated in units of dBA, but the tests were conducted in level flight and do not include takeoffs and

TABLE VI

ESTIMATED MAXIMUM A-WEIGHTED SOUND LEVELS FOR AIRPLANES AT PART 36 APPENDIX C LOCATIONS

TAKEOFF

Manufacturer	Airplane	Engine	Gr. Weight 1000 Lbs	Est. dBA	Flaps
Grumman	Gulfstream I	Dart MK 529	35.1	72.0	
Beech	V35B	IO-520-B	3.4	72.0	
Beech	35-C33A	IO-520-B	3.3	72.0	
Beech	F33A	IO-520-B	3.4	72.0	
Gates Learjet	Learjet 35	TFE731-2	17.0	72.0	20
Gates Learjet	Learjet 36	TFE731-2	17.0	72.0	20
Gates Learjet	Learjet 35A	TFE731-2	18.0	71.6	08
Gates Learjet	Learjet 36A	TFE731-2	18.0	71.6	08
Gates Learjet	Learjet 36	TFE731-2	17.0	71.4	08
Gates Learjet	Learjet 35	TFE731-2	17.0	71.4	08
Cessna	T210L	TSIO-520-R	3.8	71.0	
Cessna	340	TSIO-520-K	6.0	71.0	
Cessna	310Q	IO-470-VO	5.2	71.0	
Embraer	EMB 110-P2	PT6A-34	12.5	71.0	
Piper	PA-31-310	TIO-540-A2C	6.5	71.0	
Piper	PA32RT-300	IO-540-K1G-5D	3.6	71.0	
Swearingen	SA226-T	TPE-331-3U-303G	12.5	71.0	
Swearingen	SA226-TC	TPE-331-3UW-303G	12.5	71.0	
Swearingen	SA226-AT	TPE-331-3U-303G	12.5	71.0	
Beech	B80	IGSO-540-A1D	8.8	70.0	
Cessna	T310R	TSIO-520-B	5.5	70.0	
Piper	PA-32-300	IO-540-K1A5	3.4	70.0	
Ted Smith	601	IO-540-S1A5	6.0	70.0	
Beech	B60	TIO-541-E1C4	6.8	69.0	
Cessna	TU206G	TSIO-520-M	3.6	69.0	
Cessna	T210M	TSIO-520-R	3.8	69.0	
Cessna	185F	IO-520-D	3.4	69.0	
Cessna	401	TSIO-520-E	6.3	69.0	
Cessna	414	TSIO-520-N	6.8	69.0	
DeHavilland	DHC-7	PT6A-50	43.5	69.0	
Piper	PA-23-250	IO-540-C1A	5.2	69.0	
Piper	PA-28B-235	O-540-B4B5	2.9	69.0	
Cessna	182Q	O-470-U	3.0	68.0	
Dassault Breguet	Falcon 10	TFE731-2	18.7	67.6	15
Beech	E55	IO-520-C	5.3	67.0	
Cessna	180	O-470-U	2.8	67.0	
DeHavilland	DHC-6	PT6A-27	12.5	67.0	
Piper	PA-34-200T	TSIO-360-E	4.8	67.0	
Rockwell Int'l	680FL	IGSO-540-B1A	8.5	67.0	
Beech	99A	PT6A-27	10.4	66.0	
Beech	58	IO-520-C	5.4	66.0	
Cessna	177RG	IO-360-A1B6	2.8	66.0	
Mitsubishi	MU-2B-36A	TPE-331-5-252M	11.0	66.0	
Piper	PA-42	PT6A-41	10.5	66.0	
Beech	A24R	IO-360-A1B6	2.8	65.0	
Bellanca	17-30A	IO-540-T4B5D	3.3	65.0	
Beech	C90	PT6A-21	9.7	64.0	
Mitsubishi	MU-2B-26A	TPE-331-5-252M	10.0	64.0	
Mooney	M20C	O-360-A1D	2.6	64.0	
Rockwell Int'l	112	IO-360-C1C6	2.6	64.0	
Aerospatiale	SN601 Corvette	JT15D-4	13.9	63.8	15
Cessna	404	GTSIO-520-M	8.4	63.0	
Grumman American	GA-7	O-320-D1D	3.8	63.0	
Piper	PA-24-260	IO-540-K1A5	3.2	63.0	
Piper	PA-28-200	IO-360-C1C	2.7	63.0	
Beech	A100	PT6A-28	11.5	62.0	
Cessna	421B	GTSIO-520-L	7.5	62.0	
Piper	PA31T	PT6A-28	9.0	62.0	
Cessna	500	JT15D-1	11.5	61.1	15
Beech	C23	O-360-A4K	2.5	60.0	
Cessna	170B	O-300-A	2.2	60.0	
Grumman American	AA-5	O-320-E2G	2.2	60.0	
Piper	PA-28-140	O-320-E2A	2.2	60.0	
Bellanca	8GCBC	O-360-C2E	2.2	59.0	
Cessna	172	O-320-A	2.3	58.0	
Mooney	M20J	IO-360-A1B6D	2.7	58.0	
Grumman American	AA-1A	O-235-62C	1.6	57.0	
Cessna	152	O-235-L2C	1.7	55.0	
Cessna	150	O-200-A	1.6	55.0	
Piper	PA-18-150	O-320-A2B	1.8	54.0	
Rockwell Int'l	690B	TPE-331-5-251K	10.3	54.0	
Bellanca	7GCAA	O-320-A2B	1.7	51.0	

TABLE VII

ESTIMATED MAXIMUM A-WEIGHTED SOUND LEVELS
FOR AIRPLANES AT PART 36, APPENDIX C LOCATIONS
TAKEOFF

Manufacturer	Airplane	Engine	Gr. Weight 1,000 Lbs.	Est. dBA	Flaps
Concorde	Concorde	0-593/M-602	400.0	112.9	
General Dynamics	CV-880-22M	CJ-805-36	193.0	107.8	
General Dynamics	CV-880-22	CJ-805-3	184.0	105.8	
Boeing	B-747-100	JT9D-3	710.0	105.7	10
McDonnell Douglas	DC8-55	JT3D-3B	328.0	105.2	
McDonnell Douglas	DC8-61	JT3D-3B	328.0	105.2	
Boeing	B-707-120	JT3C-6	258.0	104.6	
Boeing	B-747-200	JT9D-3A	767.0	104.2	10
McDonnell Douglas	DC8-50	JT3D-1	300.0	104.2	
McDonnell Douglas	DC8-62	JT3D-3B	350.0	104.2	
McDonnell Douglas	DC8-63	JT3D-3B	350.0	104.2	
Boeing	B-707-420	RCO.MK508	316.0	103.8	
McDonnell Douglas	DC8-40	RCO. 12	315.0	103.8	
McDonnell Douglas	DC-8-10	JT3C-6	273.0	103.8	
McDonnell Douglas	DC8-50	JT3D-3B	315.0	103.2	
Boeing	B-747-100	JT9D-3AWET	735.0	103.1	10
Boeing	B-747-200	JT9D-3A	773.0	102.8	10
Boeing	B-747-200	JT9D-7	770.0	102.6	10
McDonnell Douglas	DC8-30	JT4A-9	315.0	102.2	
Boeing	B-747-100	JT9D-7	710.0	101.5	10
Boeing	B-747-200	JT9D-7WET	775.0	101.5	10
Boeing	B-747-100	JT9D-7WET	735.0	101.4	10
Boeing	B-707-320C	JT3D-3B	332.0	101.2	
McDonnell Douglas	DC8-62	JT3D-3B	335.0	101.2	
McDonnell Douglas	DC8-62	JT3D-7	350.0	101.2	
McDonnell Douglas	DC8-63	JT3D-7	355.0	101.2	
Boeing	B-707-320B	JT3D-3B	328.0	100.8	
Boeing	B-747-100	JT9D-7FWET	750.0	100.5	10
Boeing	B-747-100	JT9D-7F	750.0	100.5	10
Boeing	B-747-200	JT9D-3A	767.0	100.5	10
Boeing	B-747-100	JT9D-7WET	750.0	100.2	10
Boeing	B-747-200	JT9D-7FWET	805.0	99.9	10
Hawker Siddeley	TRIDENT 1E	RB163 MK511-5	130.0	99.8	
Hawker Siddeley	TRIDENT 2E	RE163 MK512-5	143.5	99.8	
Boeing	B-720	JT3C-7	230.0	99.6	
Boeing	B-747-200	JT9D-3AWET	773.0	99.6	10
Boeing	B-747-200	JT9D-7	770.0	99.4	10
Boeing	B-747-200	JT9D-7WET	785.0	99.3	10
Boeing	B-747-100	JT9D-7	710.0	99.1	10
Boeing	B-747-200	JT9D-7F	775.0	99.1	10
Lockheed	1329 JETSTAR	JT12A-8	42.0	99.1	
Boeing	B-707-320	JT4A-11	316.0	98.6	
Boeing	B-747-200	CF6-50E	820.0	97.3	10
General Dynamics	CV-990A	CJ-805-23	253.0	97.2	
Boeing	B-707-220	JT4A-3	248.0	96.6	
Boeing	B-747-200	CF6-50E	800.0	96.6	10
Boeing	B-747-SP	JT9D-7FWET	695.0	96.2	10
Boeing	B-747-SP	JT9D-7A	690.0	96.1	10
Boeing	B-747-200	RB211-524B	800.0	96.0	10
Boeing	B-707-120B	JT3D-5	258.0	95.8	
Boeing	B-747-200	CF6-50E	775.0	95.8	10
Hawker Siddeley	TRIDENT 3B	RB163 MK512-5	150.0	95.8	
McDonnell Douglas	DC8-20	JT4A-3	276.0	95.8	
McDonnell Douglas	DC-10-30	CF6-50C1	590.0	95.4	06
Boeing	B-747-SP	JT9D-7A	660.0	94.9	10
Boeing	B-747-SP	JT9D-7F	660.0	94.9	10
McDonnell Douglas	DC-10-30	CF6-50C	565.0	94.5	10
McDonnell Douglas	DC-10-30	CF6-50C1	572.0	94.5	10
Boeing	B-727-200	JT8D-15	190.5	94.1	05
Boeing	B-747-200	JT9D-70A	820.0	94.1	10
McDonnell Douglas	DC-10-30	CF6-50C1	562.0	94.1	10
McDonnell Douglas	DC-10-30	CF6-50C	550.0	93.9	10
McDonnell Douglas	DC-10-30	CF6-50A	550.0	93.8	08
McDonnell Douglas	DC-10-30	CF6-50C	534.4	93.4	10
McDonnell Douglas	DC-10-30	CF6-50C1	534.4	93.1	10
Boeing	B-747-SR	JT9D-7A	610.0	92.9	10
McDonnell Douglas	DC-10-40	JT9D-59B	590.0	92.7	10
Boeing	B-727-200	JT8D-17RQN	208.0	92.6	05

TABLE VII
(Continued)
ESTIMATED MAXIMUM A-WEIGHTED SOUND LEVELS
FOR AIRPLANES AT PART 36, APPENDIX C LOCATIONS
TAKEOFF

Manufacturer	Airplane	Engine	Gr. Weight 1,000 Lbs.	Est. dBA	Flaps
McDonnell Douglas	DC-10-40	JT9D-59A	590.0	92.4	10
Boeing	B-727-200	JT8D-17QN	203.1	92.2	05
McDonnell Douglas	DC-10-30	CF6-50A	519.6	92.2	08
Boeing	B-727-200	JT8D-9	172.5	92.1	15
Boeing	B-720B	JT3D-1	235.0	91.8	
Hawker Siddeley	TRIDENT 1	RB163 MK505-5	115.0	91.8	
McDonnell Douglas	DC-10-40	JT9D-59B	555.0	91.2	10
Boeing	B-727-100	JT8D-1	161.0	90.8	05
McDonnell Douglas	DC-10-40	JT9D-59A	555.0	90.6	10
BAC	1-11-500	SPEY MK512	104.5	90.5	
McDonnell Douglas	DC-10-40	JT9D-20	530.0	90.5	10
Boeing	B-727-200	JT8D-17RQN	197.0	90.4	05
Boeing	B-727-200	JT8D-9QN	184.8	90.4	15
McDonnell Douglas	DC-10-30	CF6-50C	440.0	90.4	10
McDonnell Douglas	DC-10-30	CF6-50C	440.0	90.3	10
Boeing	B-727-200	JT8D-15QN	190.5	90.2	05
Boeing	B-747-SR	JT9D-7A	570.0	90.0	10
Rockwell International	SABRE 40A	JT12A-8	19.6	90.0	
BAC	1-11-500	SPEY MK512	99.7	89.9	
Boeing	B-727-200	JT8D-17QN	190.5	89.8	05
IAI	1121 COMMODORE	CJ610-5	18.5	89.7	
IAI	1123 WESTWIND	CJ610-9	20.7	89.7	
Messerschmitt-Bolkow	HFB-320 HANSA	CJ610-5	20.2	89.7	
Boeing	B-727-100	JT8D-1FCD	169.5	89.3	05
Boeing	B-727-200	JT8D-15QN	184.2	89.0	05
Boeing	B-727-200	JT8D-7QN	172.5	88.9	15
McDonnell Douglas	DC-10-10	CF6-6D	440.0	88.9	05
Boeing	B-727-100	JT8D-7FCD	169.5	88.7	05
Boeing	B-727-100	JT8D-9FCD	169.5	88.6	05
Boeing	B-727-200	JT8D-7QN	169.5	88.2	15
McDonnell Douglas	DC-10-40	JT9D-20	484.0	88.2	10
McDonnell Douglas	DC-10-10	CF6-6D	430.0	88.1	08
McDonnell Douglas	DC-10-10	CF6-6D1	440.0	88.1	08
Boeing	B-727-200	JT8D-9QN	172.5	87.9	15
Boeing	B-727-100	JT8D-1FCD	160.5	87.4	05
Boeing	B-737-200	JT8D-9QN	117.0	87.3	01
Boeing	B-727-100C	JT8D-7	160.5	87.3	05
McDonnell Douglas	DC-10-10	CF6-6D1	430.0	87.3	11
Lockheed	L-1011-1	RB211-22C	430.0	87.1	10
Boeing	B-737-200	JT8D-9QN	115.5	86.9	01
Boeing	B-737-200	JT8D-17QN	122.5	86.9	01
Lockheed	L-1011-1	RB211-22C	422.0	86.9	10
McDonnell Douglas	DC-10-10	CF6-6D	410.0	86.9	14
Boeing	B-737-200	JT8D-9QN	114.5	86.8	01
Boeing	B-727-100	JT8D-7FCD	160.5	86.8	05
Boeing	B-737-200	JT8D-15QN	117.0	86.6	01
Boeing	B-737-200C	JT8D-15	115.5	86.5	01
Boeing	B-737-200	JT8D-7QN	109.0	86.4	01
Boeing	B-727-100	JT8D-9FCD	160.5	86.4	05
Boeing	B-737-100	JT8D-9	111.0	86.1	
Boeing	B-737-200	JT8D-15QN	115.5	86.1	01
Boeing	B-737-200	JT8D-9QN	115.5	86.1	01
McDonnell Douglas	DC-10-40	JT9D-20	430.0	85.6	10
Boeing	B-737-200	JT8D-9	110.7	85.5	01
McDonnell Douglas	DC-9-50	JT8D-17	121.0	85.4	
Boeing	B-737-200	JT8D-17QN	115.5	85.3	01
Lockheed	L-1011-1	RB211-22C	416.0	85.3	10
McDonnell Douglas	DC-9-30	JT8D-17	121.0	85.3	
Lockheed	L-1011-1	RB211-22C	396.0	85.2	10
Lockheed	L-1011	RB211-22B	430.0	85.1	14
McDonnell Douglas	DC-9-50	JT8D-15	121.0	85.1	
Boeing	B-737-200	JT8D-9QN	109.0	84.9	01
Gates Learjet	LEARJET 23	CJ-610-1	12.5	84.7	
Rockwell International	SABRE 60	JT12A-8	20.0	84.7	
McDonnell Douglas	DC-10-10	CF6-6D	377.5	84.5	14
McDonnell Douglas	DC-10-10	CF6-6D1	386.5	84.5	15
McDonnell Douglas	DC-9-50	JT8D-17	118.0	84.5	
McDonnell Douglas	DC9-30	JT8D-9	114.0	84.3	

TABLE V-1

(Continued)

ESTIMATED MAXIMUM A-WEIGHTED SOUND LEVELS

FOR AIRPLANES AT PART 36, APPENDIX C LOCATIONS

TAKEOFF

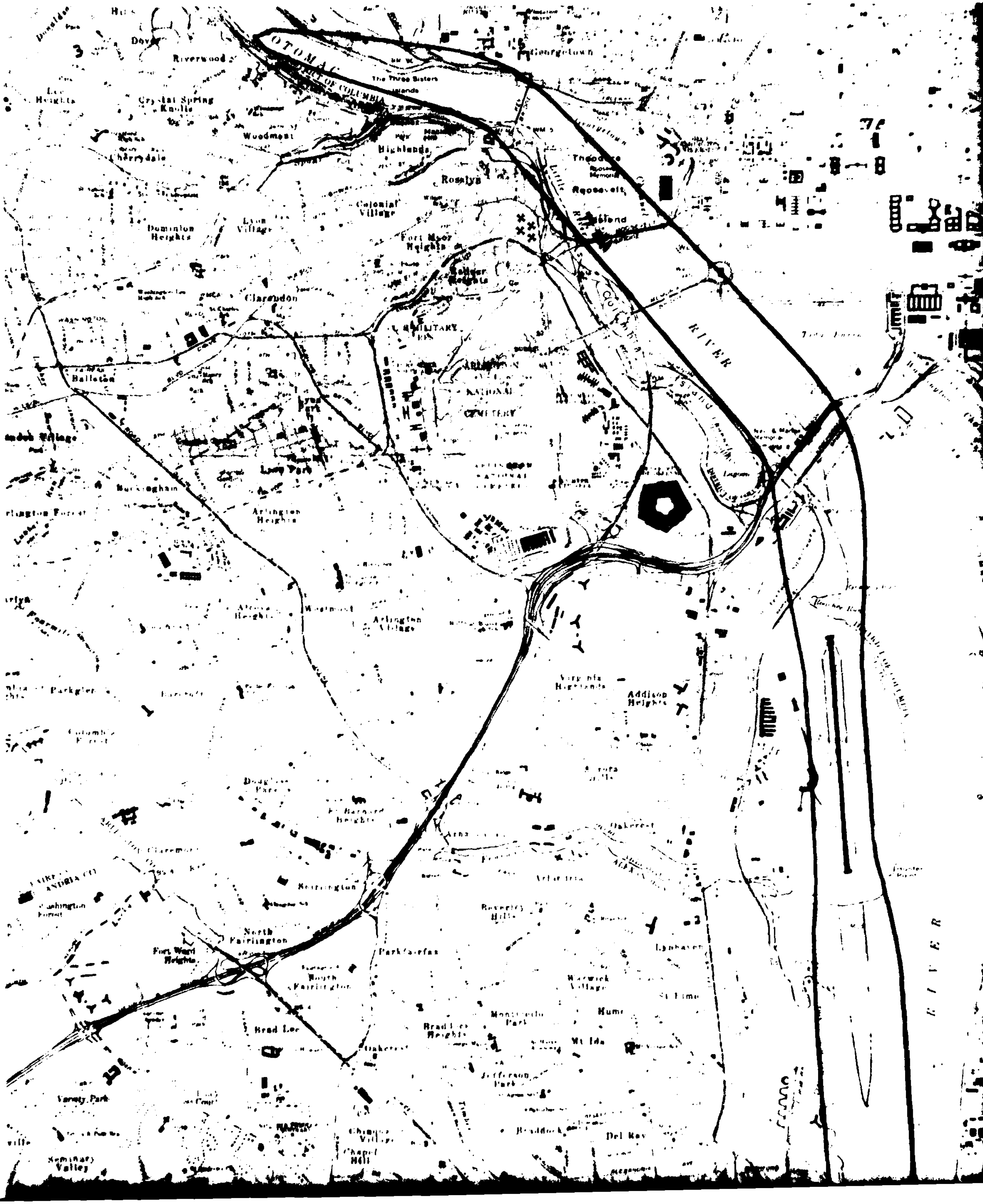
Manufacturer	Airplane	Engine	Gr. Weight 1,000 Lbs.	Lst. dBA	Flaps
Grumman American	GULFSTREAM II	SPEY MK511-8	65.5	84.2	20
McDonnell Douglas	DC-9-40	JT8D-11	114.0	84.1	
Boeing	B-737-200	JT8D-7QC	100.5	83.8	01
McDonnell Douglas	DC-9-50	JT8D-17	115.0	83.7	
McDonnell Douglas	DC-9-30	JT8D-17	115.0	83.6	
McDonnell Douglas	DC-9-30	JT8D-9	110.0	83.4	
McDonnell Douglas	DC-9-50	JT8D-15	115.0	83.4	
McDonnell Douglas	DC-9-40	JT8D-15	114.0	83.1	
McDonnell Douglas	DC-9-50	JT8D-15	114.0	83.1	
Gates Learjet	LEARJET 25D	CJ610-6	15.0	82.8	20
Gates Learjet	LEARJET 25D	CJ610-6	15.0	82.8	20
McDonnell Douglas	DC-9-30	JT8D-9	108.0	82.8	
McDonnell Douglas	DC-9-40	JT8D-11	107.0	82.5	
McDonnell Douglas	DC-9-30	JT8D-7A	108.0	82.4	
Airbus	A-300B4-2C	SPEY MK512	98.9	82.3	
Lockheed	1329-25 JETSTAR II	TFE731-3-1E	43.8	82.3	20
McDonnell Douglas	DC-9-50	JT8D-17	110.0	82.3	
McDonnell Douglas	DC-9-30	JT8D-11	114.0	82.3	
McDonnell Douglas	DC-9-30	JT8D-17	110.0	82.2	
McDonnell Douglas	DC-9-30	JT8D-15	110.0	82.0	
McDonnell Douglas	DC-9-50	JT8D-15	110.0	82.0	
McDonnell Douglas	DC-9-30	JT8D-9	103.0	81.6	
McDonnell Douglas	DC-9-30	JT8D-15	108.0	81.5	
Lockheed	L-188	501-D13	116.0	81.3	
Gates Learjet	LEARJET 24D	CJ610-6	13.5	80.6	20
McDonnell Douglas	DC-9-40	JT8D-15	105.0	80.6	
McDonnell Douglas	DC9-30	JT8D-7	108.0	80.3	
Grumman American	GULFSTREAM II	SPEY MK511-8	62.0	80.1	20
Gates Learjet	LEARJET 25D	CJ610-6	15.0	79.7	08
Gates Learjet	LEARJET 25F	CJ61C-6	15.0	79.7	08
Hawker Siddeley	HS-125-400	VIPER 522	23.3	79.7	
Airbus	A-300B4-20	CF6-50C	346.5	79.4	
VFW Fokker	F-28-MK1000	SPEY MK555-15	65.0	79.2	06
VFW Fokker	F-28 MK2000	SPEY MK555-15	65.0	79.2	06
Airbus	A-300B	CF6-50A	302.0	79.1	
McDonnell Douglas	DC-9-30	JT8D-7A	94.0	79.0	
Hawker Siddeley	HS-125-3	VIPER 522	21.0	78.7	
Hawker Siddeley	HS-125-600	VIPER 601-22	25.0	78.7	
Airbus	A-30084-2C	CF6-50C	336.6	78.5	
McDonnell Douglas	DC-9-30	JT8D-15	98.0	78.5	
Aerospatiale	NORD-262C	BASIAN VIIA	22.9	78.3	
Airbus	A-300B2-1A	CF6-50A	312.4	78.3	
McDonnell Douglas	DC9-30	JT8D-1	98.0	78.3	
McDonnell Douglas	DC9-80	JT8D-109	140.0	78.1	
Rockwell International	560E	GO-4BO-G166	6.5	78.0	
Airbus	A-300B4-2C	CF6-50C	330.0	77.9	
Hawker Siddeley	HS-125-1A	VIPER 521	19.6	77.7	
Rockwell International	SABRE 75A	CF700-2D-2	23.0	77.7	15
General Dynamics	CV-560	ALLISON 501-D130	54.6	77.3	
McDonnell Douglas	DC9-20	JT8D-9	98.0	77.3	
McDonnell Douglas	DC9-10	JT8D-5	86.3	77.3	
McDonnell Douglas	DC9-10	JT8D-1	90.7	77.3	
McDonnell Douglas	DC9-10	JT8D-7	90.7	77.3	
Airbus	A-300B2-1C	CF6-50C	312.4	77.1	
Dassault Breguet	FALCON 2D	CF700-2D-2	28.6	77.0	10
Airbus	A-300B2-1A	CF6-50A	301.4	76.8	
Airbus	A-300B1	CF6-50A	302.0	76.8	
Airbus	A-300B2-1A	CF6-50A	302.4	76.8	
Airbus	A-300B2-1C	CF6-50C	302.0	76.0	
Airbus	A-300B2-1C	CF6-50C	302.1	76.0	
Mohawk	29B	PT6A-45A	23.4	76.0	
Shorts	3-30	PT6A-45A	22.4	76.0	
Airbus	A-300B2-K-3C	CF6-50C	312.4	75.9	
Gates Learjet	LEARJET 24F	CJ610-6	13.5	74.6	20
Piper	PA-31-350	T10-540-J2BD	7.0	74.0	
Gates Learjet	LEARJET 24E	CJ610-6	12.9	73.1	20
Beech	A36 (2 BL.)	IO-520-B	3.6	73.0	
Beech	35-B33	IO-470-K	3.0	73.0	
Cessna	320C	TSIO-470-D	5.2	73.0	
Cessna	337H	IO-360-C	4.6	73.0	

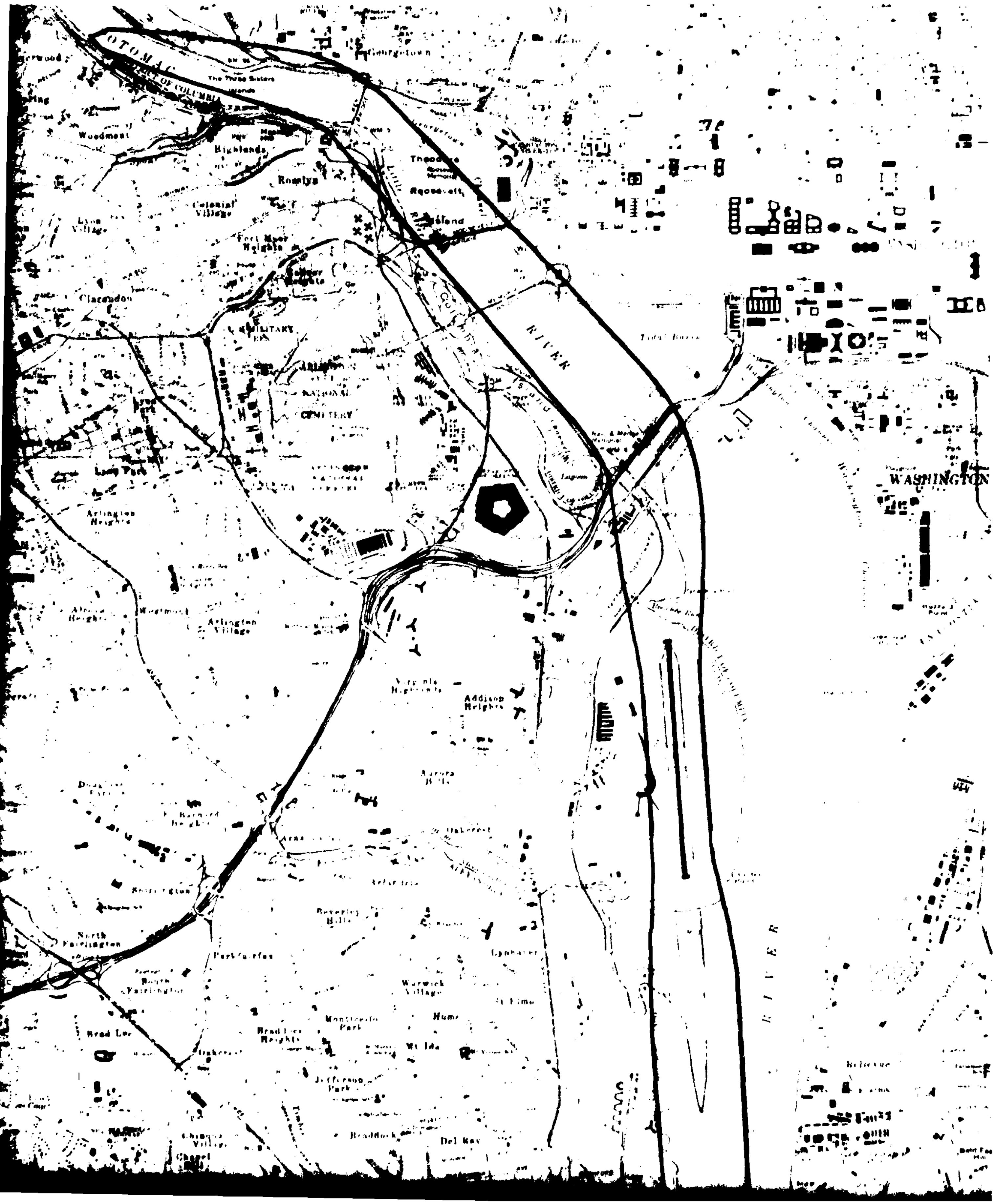
landings; therefore, these values were also estimated. While these listings provide data on a wide variety of airplane types and models within types, other specific model designations may not be shown. Operators of aircraft not listed in Table VI or VII must demonstrate, either analytically or by flight tests, that their type of airplane do not exceed the 72 dBA noise limit under certification conditions.

Since the noise levels are estimated as they might occur during type certification tests conducted under Appendix C of Part 36, these values are intended to provide a consistent basis for comparison of noise levels of major aircraft models rather than of individual aircraft. The noise levels of individual aircraft may also differ due to variations in weight and operating procedures from those used during certification. For instance, takeoff noise levels are reduced substantially as aircraft takeoff weight is reduced. Takeoff weights during normal in-service operations are often less than the maximum certificated weight. In general, for equal noise control technology, the lower the maximum weight of an airplane the lower the noise level. Conversely, those aircraft normally associated with high weight, long range operation and, therefore, greater productivity, have higher noise levels. This aspect of increasing noise levels with increasing weight is embodied in the noise certification requirements of Part 36. The takeoff noise level is also dependent on operating procedures applied. The takeoff noise level estimates may represent full thrust conditions for some aircraft and a reduced thrust condition, as permitted by FAR Part 36, for other aircraft. Neither of these conditions may be

representative of the in-service operation of a particular aircraft at a particular airport. Variations from the values of the noise estimates presented for individual flights at actual airports under the same nominal conditions could range within plus or minus 3 dBA for airplanes certificated in accordance with Part 36, and somewhat more for those airplanes not noise certificated. Additional variations in absolute value occur when aircraft operating conditions do not conform with those corresponding to noise certification. However, the relative ranking of aircraft noise levels that occur under uniform certification conditions provides the best information currently available on the relative noisiness of airplanes over a wide variety of conditions.

The same rationale applied to aircraft departing Washington National Airport at night was applied to aircraft landing at National during nighttime hours. A noise level of 85 dBA at the FAR Part 36 approach measurement point (2,000 meters from the runway threshold) produces the 72 dBA single event noise contours shown in Figure 6. As can be seen in Figure 7, the contour for the Shorts twin turboprop on an approach to runway 18 extends up the Potomac River nearly to but not extending into the densely populated area of Georgetown. Aircraft which are louder than 85 dBA at the Part 36 measurement point will produce a 72 dBA contour that would extend into populated areas, thus intruding upon residents during nighttime hours. An approach noise limit of 85 dBA (to the nearest decibel) would allow the aircraft listed in Table VIII to land at National throughout the night. Table IX contains the balance of the aircraft fleet for which FAA has


POTOMAC
DISTRICT OF COLUMBIA
The Three Sisters
Georgetown
Riverwood
Dover
Crystal Spring Knolls
Woodmont
Cherrydale
Highlands
Rosslyn
Theodore Roosevelt
Colonial Village
Dominion Heights
Lyon Village
Fort Myer Heights
Clarendon
Ballston
RIVER
MILITARY
NATIONAL CEMETERY
Lyon Park
Buckingham
Arlington Heights
Arlington Village
Virginia Highlands
Addison Heights
Parkglen
North Fairlington
Fort Ward Heights
Parkfairfax
South Fairlington
Brad Lee
Bradlee Heights
Monticello Park
Jefferson Park
Warwick Village
Lynhaven
Beverly Hills
Oakcrest
Mt Ida
Del Ray
Braddock
Chapel Hill
Seminary Valley
Variety Park
Oakcrest
Washington Forest
RIVER



Georgetown
The Three Sisters
Woodmont
Highlands
Rosslyn
Theodore
Roosevelt
Colonial Village
Lyon Village
Fort Myer Heights
Clarendon
MILITARY
NATIONAL
CEMETERY
RIVER
WASHINGTON
Lyon Park
Arlington Heights
Arlington Village
Virginia Heights
Addison Heights
Aurora Hills
North Fairlington
Park Fairfax
Warwick Village
Monticello Park
Bradlee Heights
Jefferson Park
Del Ray

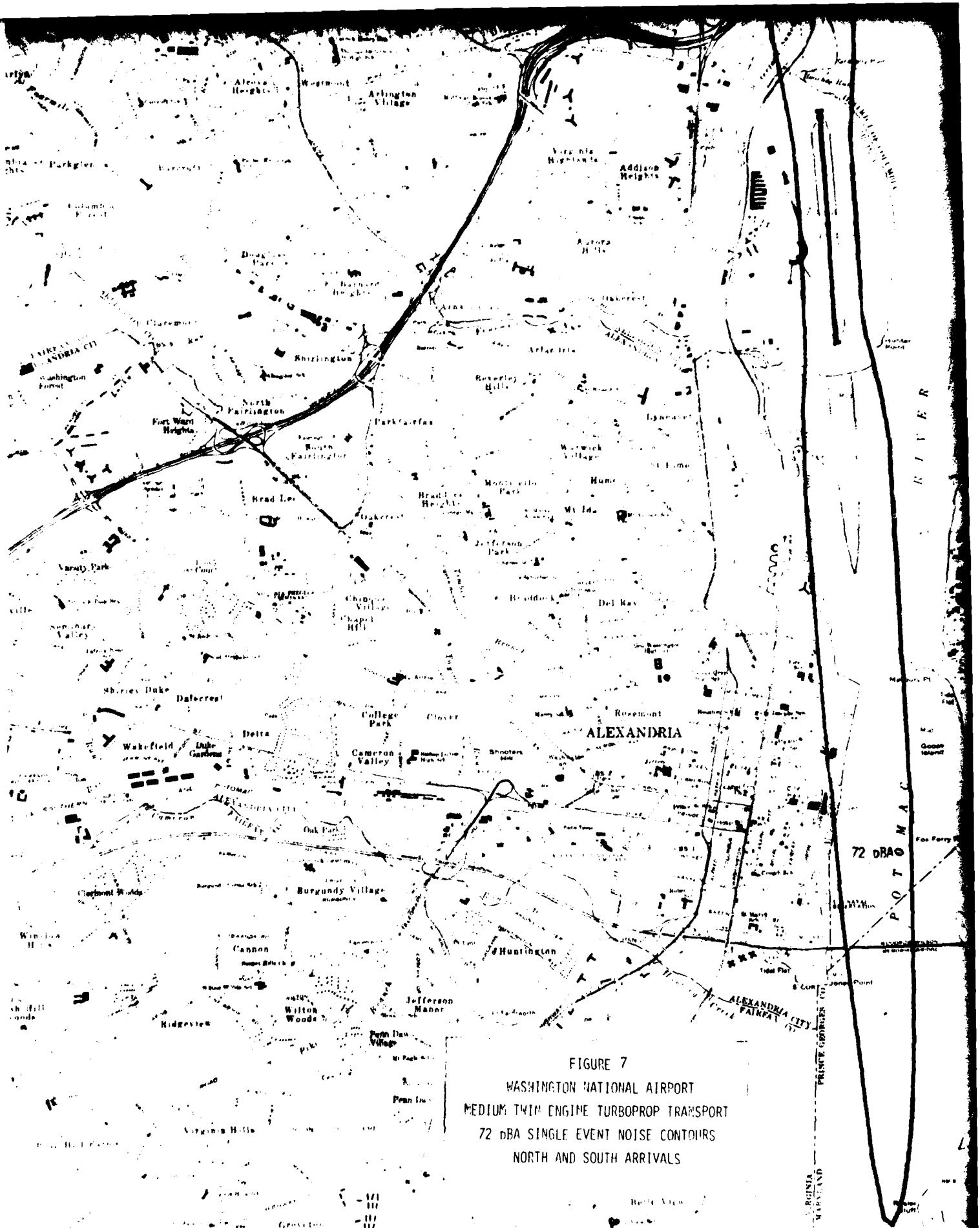


FIGURE 7
WASHINGTON NATIONAL AIRPORT
MEDIUM TWIN ENGINE TURBOPROP TRANSPORT
72 dBA SINGLE EVENT NOISE CONTOURS
NORTH AND SOUTH ARRIVALS

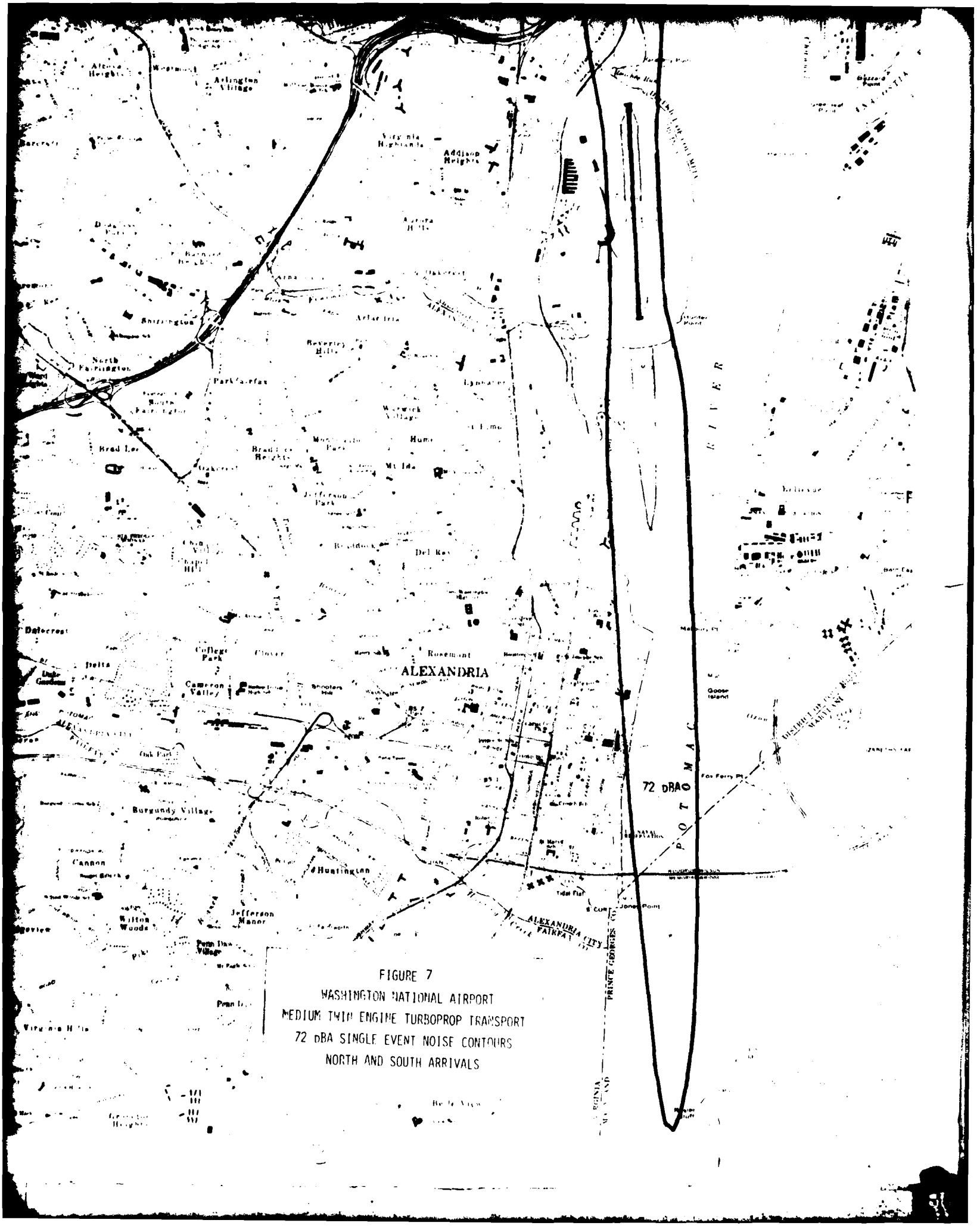


FIGURE 7
WASHINGTON NATIONAL AIRPORT
MEDIUM TWIN ENGINE TURBOPROP TRANSPORT
72 dBA SINGLE EVENT NOISE CONTOURS
NORTH AND SOUTH ARRIVALS

TABLE VIII

ESTIMATED MAXIMUM A-WEIGHTED SOUND LEVELS
FOR AIRPLANES AT PART 36, APPENDIX C LOCATIONS
APPROACH

Manufacturer	Airplane	Engine	Gr. Weight 1,000 Lbs.	Est. dBA	Flaps
Shorts	3-30	PT6A-45A	22.4	85.0	
DeHavilland	DHC-7	PT6A-50	43.5	84.0	
Gates Learjet	LEARJET 36	TFE731-2	17.0	83.1	40
Gates Learjet	LEARJET 35	TFE731-2	17.0	83.1	40
Gates Learjet	LEARJET 35A	TFE731-2	18.0	82.2	40
Gates Learjet	LEARJET 36A	TFE731-2	18.0	82.2	40
Rockwell International	560E	GO-480-G186	6.5	80.0	
IAI	1124 WESTWIND	TFE731-3-1G	22.9	79.3	20
Aerospatiale	SN601 CORVETTE	JT15D-4	13.9	79.1	35
DeHavilland	DHC-6	PT6A-27	12.5	78.0	
Cessna	500	JT15D-1	11.5	77.4	40
Beech	B80	IGSO-540-A1D	8.8	77.0	
Piper	PA-31-350	TIO-540-J2BD	7.0	77.0	
Cessna	320C	TSIO-470-D	5.2	76.0	
Embraer	EMB 110-P2	PT6A-34	12.5	76.0	
Mitsubishi	MU-2B-36A	TPE-331-5-252M	11.0	76.0	
Mitsubishi	MU-2B-26A	TPE-331-5-252M	10.0	76.0	
Piper	PA-42	PT6A-41	10.5	76.0	
Piper	PA-31-310	TIO-540-A2C	6.5	76.0	
Rockwell International	690B	TPE-331-5-251K	9.7	76.0	
Rockwell International	680FL	IGSO-540-81A	8.5	76.0	
Swearingen	SA226-AT	TPE-331-30-303G	12.5	76.0	
Swearingen	SA226-T	TPE-331-sU-303G	11.5	76.0	
Swearingen	SA226-TC	TPE-331-30W-303G	12.5	76.0	
Beech	E55	IO-520-C	5.3	75.0	
Beech	B60	TIO-541-E1C4	6.8	75.0	
Cessna	310Q	IO-470-VO	5.2	75.0	
Cessna	421B	GTSIO-520-L	7.5	75.0	
Cessna	T310R	TSIO-520-B	5.5	75.0	
Cessna	401	TSIO-520-E	6.3	75.0	
Cessna	404	GTSIO-520-M	8.4	75.0	
Cessna	414	TSIO-520-N	6.8	75.0	
Cessna	340	TSIO-520-K	6.0	75.0	
Ted Smith	601	IO-540-SIA5	6.0	75.0	
Beech	C90	PT6A-21	9.7	74.0	
Beech	99A	PT6A-27	10.4	74.0	
Beech	A100	PT6A-28	11.5	74.0	
Beech	58	IO-520-C	5.4	74.0	
Cessna	337H	IO-360-G	4.6	74.0	
Piper	PA-23-250	IO-540-C1A	5.2	74.0	
Piper	PA31T	PT6A-28	9.0	74.0	
Piper	PA-34-200T	TSIO-360-E	4.8	73.0	
Grumman American	GA-7	O-320-D1D	3.8	72.0	
Bellanca	17-30A	IO-540-T4B5D	3.3	64.0	
Piper	PA32RT-300	IO-540-K1G-5D	3.6	64.0	
Beech	35-B33	IO-470-K	3.0	63.0	
Beech	V35B	IO-520-B	3.4	63.0	
Beech	35-C33A	IO-520-B	3.3	63.0	
Beech	F33A	IO-520-B	3.4	63.0	
Beech	A36 (2 BL.)	IO-520-B	3.6	63.0	
Cessna	T210M	TSIO-520-R	3.8	63.0	
Cessna	185F	IO-520-D	3.4	63.0	
Cessna	T210L	TSIO-520-R	3.8	63.0	
Cessna	TU206G	TSIO-520-M	3.6	63.0	
Piper	PA-28B-235	O-540-B4B5	2.9	63.0	
Piper	PA-32-300	IO-540-K1A5	3.4	63.0	
Cessna	182Q	O-470-U	3.0	62.0	
Cessna	180	O-470-U	2.8	62.0	
Mooney	M20J	IO-360-A1B6D	2.7	62.0	
Piper	PA-24-260	IO-540-R1A5	3.2	62.0	
Beech	C23	O-360-A4K	2.5	61.0	

TABLE VIII

(Continued)

ESTIMATED MAXIMUM A-WEIGHTED SOUND LEVELS
FOR AIRPLANES AT PART 36, APPENDIX C LOCATIONS
APPROACH

Manufacturer	Airplane	Engine	Gr. Weight 1,000 Lbs.	Est. dBA	Flaps
Beech	A24R	IO-360-A1B6	2.8	61.0	
Bellanca	8GCBC	O-360-C2E	2.2	61.0	
Cessna	177RG	IO-360-A1B6	2.8	61.0	
Mooney	M20C	O-360-A1D	2.6	61.0	
Piper	PA-28-200	IO-360-C1C	2.7	61.0	
Rockwell International	112	IO-360-C1D6	2.6	61.0	
Bellanca	7GCAA	O-320-A2B	1.7	60.0	
Cessna	172	O-320-A	2.3	60.0	
Cessna	170B	O-300-A	2.2	60.0	
Grumman American	AA-5	O-320-E2G	2.2	60.0	
Piper	PA-28-140	O-320-E2A	2.2	60.0	
Piper	PA-18-150	O-320-A2B	1.8	60.0	
Cessna	152	O-235-L2C	1.7	59.0	
Grumman American	AA-1A	O-235-62C	1.6	59.0	
Cessna	150	O-200-A	1.6	58.0	

TABLE IX

ESTIMATED MAXIMUM A-WEIGHTED SOUND LEVELS
FOR AIRPLANES AT PART 36, APPENDIX C LOCATIONS
APPROACH

Manufacturer	Airplane	Engine	Gr. Weight 1,000 Lbs.	Est. dBA	Flaps
Concorde	CONCORDE	0-593/M-602	400.0	109.5	
Boeing	B-707-320C	JT3D-38	332.0	107.8	
Boeing	B-707-320B	JT3D-3B	328.0	106.8	
McDonnell Douglas	DC8-50	JT3D-3B	315.0	106.8	
McDonnell Douglas	DC8-55	JT3D-3B	328.0	106.8	
McDonnell Douglas	DC8-61	JT3D-3B	328.0	106.8	
Boeing	B-707-120B	JT3D-3	258.0	105.8	
Boeing	B-747-100	JT9D-3AWET	735.0	105.8	30
Boeing	B-747-100	JT9D-7WET	735.0	105.6	30
Boeing	B-747-100	JT9D-7	710.0	105.3	30
Boeing	B-720B	JT3D-1	235.0	104.8	
McDonnell Douglas	DC8-50	JT3D-1	300.0	104.8	
Boeing	B-747-100	JT9D-3	710.0	104.6	30
McDonnell Douglas	DC8-62	JT3D-7	350.0	103.8	
McDonnell Douglas	DC8-63	JT3D-7	355.0	103.8	
McDonnell Douglas	DC8-40	RCO. 12	315.0	103.8	
Boeing	B-747-200	JT9D-3A	773.0	103.4	30
Boeing	B-747-200	JT9D-3A	767.0	103.1	30
Boeing	B-747-200	JT9D-7WET	775.0	103.0	30
Hawker Siddeley	TRIDENT 3B	RB163 MK512-5	150.0	102.9	
McDonnell Douglas	DC9-3[illegible]	JT8D-7	108.0	102.9	50
McDonnell Douglas	DC9-30	JT8D-9	114.0	102.9	50
Boeing	B-747-200	JT9D-7	770.0	102.5	30
Hawker Siddeley	TRIDENT 1E	RB163 MK511-5	130.0	101.9	
Hawker Siddeley	TRIDENT 2E	RB163 MK512-5	143.5	101.9	
McDonnell Douglas	DC9-10	JT8D-5	86.3	101.9	
McDonnell Douglas	DC9-10	JT8D-7	90.7	101.9	
McDonnell Douglas	DC9-10	JT8D-1	90.7	101.9	
McDonnell Douglas	DC9-20	JT8D-9	98.0	101.9	
McDonnell Douglas	DC9-30	JT8D-1	98.0	101.9	50
McDonnell Douglas	DC9-30	JT8D-11	114.0	101.9	50
Boeing	B-737-200	JT8D-9	110.7	101.6	40
Boeing	B-737-200C	JT8D-15	115.5	101.6	40
Boeing	B-707-120	JT3C-6	258.0	101.0	
Lockheed	1329 JETSTAR	JT12A-8	42.0	101.0	50
Hawker Siddeley	TRIDENT 1	RB163 MK505-5	115.0	100.9	
McDonnell Douglas	DC8-63	JT3D-3B	350.0	100.8	
McDonnell Douglas	DC8-62	JT3D-3B	350.0	100.8	
McDonnell Douglas	DC8-62	JT3D-3B	335.0	100.8	
Boeing	B-707-220	JT4A-3	248.0	100.6	
Boeing	B-727-100	JT8D-1	161.0	100.2	40
Boeing	B-727-100C	JT8D-7	160.5	100.2	40
Boeing	B-737-100	JT8D-9	111.0	100.0	40
IAI	1121 COMMODORE	CJ610-5	18.5	100.0	
McDonnell Douglas	DC8-20	JT4A-3	276.0	99.8	
McDonnell Douglas	DC8-10	JT3C-6	273.0	99.8	
McDonnell Douglas	DC8-30	JT4A-9	315.0	99.8	
Boeing	B-727-200	JT8D-9	172.5	99.7	40
Boeing	B-727-200	JT8D-15	190.5	99.7	40
McDonnell Douglas	DC-10-30	CF6-50C1	590.0	99.2	50
IAI	1123 WESTWIND	CJ610-9	20.7	99.0	
Messerschmitt-Bolkow	HFB-320 HANSA	CJ610-5	20.2	99.0	
BAC	1-11-500	SPEY MK512	99.7	98.6	
BAC	1-11-500	SPEY MK512	104.5	98.6	
Boeing	B-707-320	JT4A-11	316.0	98.6	
Boeing	B-720	JT3C-7	230.0	98.6	
Hawker Siddeley	HS-125-600	VIPER 601-22	25.0	98.5	
McDonnell Douglas	DC-10-30	CF6-50C	550.0	98.1	50
McDonnell Douglas	DC-10-30	CF6-50C	565.0	98.0	50
McDonnell Douglas	DC-10-30	CF6-50A	550.0	98.0	50
Boeing	B-707-420	RCO.MK508	316.0	97.8	
Boeing	B-747-100	JT9D-7FWET	750.0	97.8	30
Boeing	B-747-100	JT9D-7F	750.0	97.8	30
McDonnell Douglas	DC-10-30	CF6-50A	519.6	97.8	50
McDonnell Douglas	DC-10-30	CF6-50C	440.0	97.6	50
Hawker Siddeley	HS-125-3	VIPER 522	21.0	97.5	
Hawker Siddeley	HS-125-400	VIPER 522	23.3	97.5	
Boeing	B-747-100	JT9D-7WET	750.0	97.3	30
Boeing	B-747-200	RB211-524B	800.0	97.2	30

TABLE IX
(Continued)
ESTIMATED MAXIMUM A-WEIGHTED SOUND LEVELS
FOR AIRPLANES AT PART 36, APPENDIX C LOCATIONS
APPROACH

Manufacturer	Airplane	Engine	Gr. Weight 1,000 Lbs.	Est. dBA	Flaps
Boeing	B-747-100	JT9D-7	710.0	97.2	30
Boeing	B-747-200	JT9D-7WET	785.0	96.7	30
Boeing	B-747-200	JT9D-7F	775.0	96.6	30
Hawker Siddeley	HS-125-1A	VIPER 521	19.6	96.5	
McDonnell Douglas	DC-10-40	JT9D-59A	590.0	96.5	50
McDonnell Douglas	DC-10-40	JT9D-59B	590.0	96.5	50
Boeing	B-747-SR	JT9D-7A	610.0	96.1	30
Boeing	B-747-200	JT9D-7	770.0	96.1	30
Boeing	B-747-200	JT9D-3AWET	773.0	96.1	30
Boeing	B-727-100	JT8D-9FCD	160.5	96.0	40
Boeing	B-727-100	JT8D-9FCD	169.5	96.0	40
Boeing	B-747-200	JT9D-3A	767.0	95.9	30
Gates Learjet	LEARJET 25D	CJ610-6	15.0	95.7	40
Boeing	B-747-SR	JT9D-7A	570.0	95.6	30
McDonnell Douglas	DC-10-40	JT9D-59A	555.0	95.6	35
McDonnell Douglas	DC-10-40	JT9D-59B	555.0	95.6	35
Boeing	B-747-200	CF6-50E	800.0	95.5	30
Boeing	B-747-200	CF6-50E	820.0	95.5	30
BAC	1-11-300/400	SPEY MK512	98.9	95.3	
McDonnell Douglas	DC-10-10	CF6-6D	440.0	95.3	50
McDonnell Douglas	DC-10-10	CF6-6D1	440.0	95.3	50
McDonnell Douglas	DC-10-40	JT9D-20	530.0	95.3	50
Boeing	B-747-200	JT9D-70A	820.0	95.2	30
General Dynamics	CV-880-22	CJ-805-3	184.0	94.8	
General Dynamics	CV-880-22M	CJ-805-3B	193.0	94.8	
McDonnell Douglas	DC-9-30	JT8D-17	121.0	94.8	50
McDonnell Douglas	DC-9-50	JT8D-15	121.0	94.8	50
McDonnell Douglas	DC-9-50	JT8D-17	121.0	94.8	50
Gates Learjet	LEARJET 24D	CJ610-6	13.5	94.7	40
VFW Fokker	F-28 MK2000	SPEY MK555-15	65.0	94.7	42
McDonnell Douglas	DC-10-10	CF6-6D1	430.0	94.6	50
McDonnell Douglas	DC-10-10	CF6-6D	430.0	94.6	50
Boeing	B-727-100	JT8D-1FCD	160.5	94.5	40
Boeing	B-727-100	JT8D-7FCD	160.5	94.5	40
Boeing	B-727-100	JT8D-7FCD	169.5	94.5	40
Boeing	B-727-100	JT8D-1FCD	169.5	94.5	40
McDonnell Douglas	DC-10-40	JT9D-20	484.0	94.5	50
Boeing	B-747-200	CF6-50E	775.0	94.4	30
McDonnell Douglas	DC-10-10	CF6-6D1	386.5	94.1	50
McDonnell Douglas	DC-10-10	CF6-6D	410.0	94.1	50
VFW Fokker	F-28 MK1000	SPEY MK555-15	65.0	94.1	42
McDonnell Douglas	DC-9-50	JT8D-17	118.0	94.0	40
McDonnell Douglas	DC-9-50	JT8D-15	115.0	94.0	40
Gates Learjet	LEARJET 25C	CJ610-6	15.0	93.8	40
McDonnell Douglas	DC-10-30	CF6-50C1	572.0	93.8	35
McDonnell Douglas	DC-10-40	JT9D-20	430.0	93.7	50
Boeing	B-747-SP	JT9D-7FWET	695.0	93.5	30
Boeing	B-747-SP	JT9D-7F	660.0	93.1	30
Boeing	B-747-SP	JT9D-7A	690.0	93.1	30
Dassault Breguet	FALCON 20	CF700-2D-2	28.6	93.1	40
Boeing	B-747-SP	JT9D-7A	660.0	92.8	30
McDonnell Douglas	DC-10-30	CF6-50C	534.4	92.8	35
Lockheed	L-1011-1	RB211-22C	430.0	92.7	42
McDonnell Douglas	DC-10-30	CF6-50A	550.0	92.6	35
McDonnell Douglas	DC-9-40	JT8D-15	114.0	92.3	50
McDonnell Douglas	DC-9-40	JT8D-11	114.0	92.3	50
Boeing	B-727-100	JT8D-9FCD	169.5	92.2	30
McDonnell Douglas	DC-10-30	CF6-50C	440.0	92.2	35
McDonnell Douglas	DC-10-30	CF6-50A	519.6	92.2	35
Boeing	B-737-200	JT8D-15QN	115.0	92.1	40
Lockheed	L-1011	RB211-22B	430.0	92.1	42
Boeing	B-737-200	JT8D-9QN	117.0	92.0	40
McDonnell Douglas	DC-9-30	JT8D-9	110.0	92.0	50
Rockwell International	SABRE 60	JT12A-8	20.0	92.0	24
Rockwell International	SABRE 40A	JT12A-8	19.6	92.0	
Boeing	B-737-200	JT8D-9QN	114.5	91.9	40
Boeing	B-737-200	JT8D-9QN	115.5	91.9	40
Boeing	B-737-200	JT8D-15QN	117.0	91.9	40
McDonnell Douglas	DC-9-30	JT8D-15	114.0	91.9	50
McDonnell Douglas	DC-9-30	JT8D-9	114.0	91.9	50
McDonnell Douglas	DC-9-80	JT8D-109	108.0	91.7	50

TABLE IX
(Continued)
ESTIMATED MAXIMUM A-WEIGHTED SOUND LEVELS
FOR AIRPLANES AT PART 36, APPENDIX C LOCATIONS
APPROACH

Manufacturer	Airplane	Engine	Gr. Weight 1,000 Lbs.	Est. dBA	Flaps
McDonnell Douglas	DC-9-30	JT8D-15	110.0	91.7	50
Boeing	B-737-200	JT8D-17QN	115.5	91.6	40
Airbus	A-300B4-2C	CF6-50C	330.0	91.5	25
Airbus	A-300B4-2C	CF6-50C	336.6	91.5	25
Airbus	A-300B4-2C	CF6-50C	346.5	91.5	25
Airbus	A-300B1	CF6-50A	302.0	91.4	15
Airbus	A-300B2-1A	CF6-50A	302.4	91.4	15
Lockheed	L-1011-1	RB211-22C	416.0	91.4	33
Lockheed	L-1011-1	RB211-22C	422.0	91.4	33
Airbus	A-300B2-K-3C	CF6-50C	312.4	91.3	25
Lockheed	L-1011	RB211-22B	430.0	91.3	33
McDonnell Douglas	DC-9-30	JT8D-15	108.0	91.3	50
Grumman American	GULFSTREAM II	SPEY MK511-8	62.0	91.1	39
Boeing	B-737-200	JT8D-17QN	122.5	91.0	40
Airbus	A-300B	CF6-50A	302.0	90.9	25
Airbus	A-300B2-1A	CF6-50A	312.4	90.9	25
Airbus	A-300B2-1C	CF6-50C	312.4	90.9	25
Boeing	B-737-200	JT8D-9QN	109.0	90.8	40
Lockheed	L-1011-1	RB211-22C	416.0	90.8	33
Airbus	A-300B2-1A	CF6-50A	301.4	90.7	25
Airbus	A-300B1	CF6-50A	302.0	90.7	25
Airbus	A-300B2-K-3C	CF6-50C	312.4	90.7	15
Airbus	A-300B2-1C	CF6-50C	302.1	90.7	25
Boeing	B-727-200	JT8D-7QN	169.5	90.6	40
Boeing	B-727-200	JT8D-7QN	172.5	90.6	40
Airbus	A-300B2-1C	CF6-50C	312.4	90.4	15
Airbus	A-300B2-1A	CF6-50A	312.4	90.4	15
Airbus	A-300B2-1C	CF6-50C	302.0	90.4	15
McDonnell Douglas	DC-10-40	JT9D-20	530.0	90.3	35
Rockwell International	SABRE 75A	CF700-2D-2	23.0	90.3	25
McDonnell Douglas	DC-9-30	JT8D-7A	108.0	90.2	50
McDonnell Douglas	DC-10-10	CF6-6D1	440.0	90.2	35
McDonnell Douglas	DC-10-10	CF6-6D	440.0	90.2	35
Airbus	A-300B4-2C	CF6-50C	330.0	90.0	15
Airbus	A-300B4-2C	CF6-50C	336.6	90.0	15
Airbus	A-300B4-2C	CF6-50C	346.5	90.0	15
Lockheed	L-1011-1	RB211-22C	396.0	90.0	33
McDonnell Douglas	DC-9-30	JT8D-7A	94.0	89.9	50
Gates Learjet	LEARJET 23	CJ-610-1	12.5	89.7	
McDonnell Douglas	DC-10-10	CF6-6D1	430.0	89.6	35
McDonnell Douglas	DC-10-10	CF6-6D	430.0	89.6	35
Lockheed	L-188	5D1-D13	116.0	89.5	
Boeing	B-727-100	JT8D-7FCD	169.5	89.1	30
Boeing	B-727-100	JT8D-7FCD	160.5	89.1	30
Boeing	B-727-100	JT8D-1FCD	160.5	89.1	30
Boeing	B-727-100	JT8D-1FCD	169.5	89.1	30
McDonnell Douglas	DC-10-10	CF6-6D1	386.5	89.1	35
McDonnell Douglas	DC-10-10	CF6-6D	410.0	89.1	35
McDonnell Douglas	DC-10-40	JT9D-20	484.0	89.1	35
Aerospatiale	NORD 262C	BASTAN VIIA	22.9	88.9	
Boeing	B-727-200	JT8D-9QN	172.5	88.9	40
Boeing	B-727-200	JT8D-15QN	184.2	88.9	40
Boeing	B-727-200	JT8D-15QN	190.5	88.9	40
Boeing	B-727-200	JT8D-17QN	190.5	88.9	40
Boeing	B-727-200	JT8D-17QN	203.1	88.9	40
Boeing	B-727-200	JT8D-17RQN	208.0	88.9	40
Boeing	B-727-200	JT8D-9QN	184.8	88.9	40
Boeing	B-727-200	JT8D-17RQN	197.0	88.9	40
Boeing	B-737-200	JT8D-7QN	109.0	88.8	40
Boeing	B-737-200	JT8D-7QN	100.5	88.8	40
Grumman American	GULFSTREAM I	DART MK529	35.1	88.6	
McDonnell Douglas	DC-10-40	JT9D-20	430.0	88.4	35
Boeing	B-737-200	JT8D-17QN	122.5	88.3	30
Boeing	B-737-200	JT8D-15QN	115.5	88.3	30
Boeing	B-737-200	JT8D-15QN	117.0	88.3	30
Gates Learjet	LEARJET 24E	CJ610-6	12.9	88.3	40
Gates Learjet	LEARJET 24F	CJ610-6	13.5	88.3	40
Lockheed	L329-25 JETSTAR II	TFE731-3-1E	43.8	88.3	50
Gates Learjet	LEARJET 25F	CJ610-6	15.0	88.2	40
VFW Fokker	F-27-200	MK532-7	43.5	88.1	

TABLE IX
(Continued)
ESTIMATED MAXIMUM A-WEIGHTED SOUND LEVELS
FOR AIRPLANES AT PART 36, APPENDIX C LOCATIONS
APPROACH

Manufacturer	Airplane	Engine	Gr. Weight 1,000 Lbs.	Est. dBA	Flaps
Boeing	B-737-200	JT8D-9QN	109.0	87.9	30
Boeing	B-737-200	JT8D-9QN	114.5	87.9	30
Boeing	B-737-200	JT8D-9QN	115.5	87.9	30
Boeing	B-737-200	JT8D-9QN	117.0	87.9	30
Boeing	B-737-200	JT8D-7QN	172.5	87.4	30
Boeing	B-727-200	JT8D-7QN	169.5	87.4	30
VFW Fokker	F-27-400/600	MK532-7R	43.5	86.8	
General Dynamics	CV-580	ALLISON 501-D13D	54.6	86.3	
Dassault Breguet	FALCON 10	TFE731-2	18.7	86.2	52
Boeing	B-727-200	JT8D-15QN	184.2	86.1	30
Boeing	B-727-200	JT8D-9QN	184.8	86.1	30
Boeing	B-727-200	JT8D-17RQN	197.0	86.1	30
Boeing	B-727-200	JT8D-15QN	190.5	86.1	30
Boeing	B-727-200	JT8D-17QN	203.1	86.1	30
Boeing	B-727-200	JT8D-17QN	190.5	86.1	30
Boeing	B-727-200	JT8D-17RQN	208.0	86.1	30
Mohawk	298	PT6A-45A	23.4	86.0	
Boeing	B-737-200	JT8D-7QN	100.5	85.8	30

estimated dBA levels. The aircraft listed in Table VI exceed the 85 dBA noise limit and would not normally be permitted to land at National Airport during nighttime hours.

Based on the above analysis, a noise limitation of 72 dBA on takeoff and 85 dBA on approach, as measured under 14 CFR 36 conditions, was chosen as the operational limits from 10:00 p.m. through 6:59 a.m., and was included as an assumption in the three new alternatives considered here.

AIR QUALITY

The August 1980 Environmental Impact Statement compared the air quality impacts associated with the five alternative policies, in terms of the projected emissions inventory at each of the three principal airports serving the Metropolitan Washington area. In addition, at the two Federal airports, ambient ground-level concentrations of carbon monoxide, total unburned hydrocarbons, nitrogen dioxide, and particulates were estimated for each of the five alternative policies, using an atmospheric dispersion model. Since the amount of emissions and the level of pollutant concentrations are related to three key factors (the number of passengers using each facility, the number of aircraft operations, and the type and number of engines on those aircraft), it is possible to infer the 1990 air quality impacts associated with the additional alternative policies addressed in this Final Supplement to the Environmental Impact Statement.

The conservative approach that was used in the August 1980 Environmental Impact Statement tends to overstate the aircraft contribution to an emissions inventory and to predicted ambient concentrations of pollutants. Since use of a conservative approach affects absolute values only, and does not effect a comparative analysis of alternative policy impacts, the same assumptions were used in considering the impacts of the additional alternative policies. The two principal contributions to the relatively high aircraft contributions are assumptions concerning emission factors and landing-takeoff (LTO) cycle. Subsequent to the preparation of the anlayses for the August 1980 Environmental Impact Statement, the Environmental Protection Agency (EPA) revised its aircraft emissions factors. The 1973 emission factors, used in the analyses, were higher than the emissions factors published by the EPA in 1980. For the computations of aircraft emissions used in the 1980 analyses, it was assumed that there will be no further reductions in these factors through 1990. In addition, the standard landing-takeoff cycle adopted by the Environmental Protection Agency was used for all scenarios at all three airports, in calculating aircraft emissions loading. The landing-takeoff cycle is different for each airport, depending primarily on the taxi-idle portion of the cycle where most of the aircraft contribution to carbon monoxide and hydrocarbon emissions occurs. For example, the taxi-idle portion of the EPA LTO cycle is 26 minutes. Typical times for taxi-idle are 16 minutes at Washington National Airport, 12 minutes at Baltimore-Washington International Airport, and 9 minutes at Dulles International Airport.

Daily Emissions Inventory

The daily emissions inventory in Table X is a convenient summary for comparing the pollution impact of alternative policies. The inventory is a sum of the aircraft emissions, airport-related emissions from automobile traffic and service-vehicles, and emissions from automobiles traveling to and from the three airports. The emissions inlcuded in the inventory are carbon monoxide, total unburned hydrocarbons, nitrogen oxides, total suspended particulates, and sulfur dioxide.

The total emissions inventories associated with the first five alternative policies in the table were compiled from information in the August 1980 Environmental Impact Statement. The emissions inventories associated with the three additional alternative policies were estimated from the projected passenger activity and the number and types of aircraft forecast to be operating at Washington National Airport under each policy alternative.

Washington National Airport and Dulles International Airport are both in the National Capital Interstate Air Quality Control Region (AQCR), and Baltimore-Washington International Airport is in the Metropolitan Baltimore Intrastate AQCR. Table X indicates that for Washington National Airport alone, the emissions loading is more sensitive to alternative policy considerations than the emissions inventories in the National Capital Interstate AQCR and in the bi-regional area (both AQCRs). The emissions loadings for these three additional alternatives at Washington National Airport are within the

TABLE X

TOTAL EMISSIONS INVENTORY
(thousands of pounds per day)

	Washington National	Dulles International	Total in National Capital Interstate AQCR	Baltimore-Washington International	Total both AQCRs
Reduced Activity (14 million passengers annually at Washington National)	51.7	114.6	166.3	72.5	238.8
Controlled Growth (16 million)	55.5	105.6	161.1	68.8	229.9
Controlled Growth (18 million)	61.5	99.2	160.7	63.7	224.4
No Policy Change (19.2 million)	64.1	91.1	155.2	60.4	215.6
Expanded Growth (21.8 million)	74.4	92.8	167.2	56.0	223.2
Controlled Activity with Noise Limitations (16 million)	57.0 (63.0)*	106.0	163.0 (169.0)*	69.0	232.0 (238.0)*
Unconstrained Activity with Noise Limitations (22.8 million)	63.0 (71.)*	90.0	153.0 (161.0)*	54.0	207.0 (215.0)*
Controlled Activity with Noise Limitations as modified (16 million)	57.0 (63.0)*	106.0	163.0 (169.0)*	69.0	232.0 (238.0)*

*With widebody aircraft at Washington National Airport.

range of the five alternative policies evaluated in the August 1980 Environmental Impact Statement. The Controlled Activity alternative and the Controlled Activity alternative as modified by the House of Representatives amendment, with 30% fewer passengers and 20% fewer operations in 1990, have lower emissions inventories at Washington National Airport than the Unconstrained Activity alternative, but the regional and bi-regional impacts of the two Controlled Activity alternatives are greater than the Unconstrained Activity alternative. If widebody aircraft models were accepted at Washington National Airport, the emissions inventories for the three new alternatives would increase about 10%, as shown in Table X.

The emissions inventories for the first two alternative policies are lower than the values which were shown in the Draft Supplement to the Environmental Impact Statement issued in July 1981. The calculations presented there were less precise than the revised values, inasmuch as the emissions factors used previously were all associated with older technology engines. The revised inventories, included here, use emissions factors associated with the new-technology engines which would be required for aircraft meeting the noise limitations after 1986.

Ambient Concentrations

In the August 1980 Environmental Impact Statement, an atmospheric dispersion model was used to estimate the ambient concentrations of

carbon monoxide, hydrocarbons, nitrogen dioxide and particulates from all sources at various locations in the vicinity of Washington National and Dulles International Airport.

The results of the dispersion analysis in the August 1980 Environmental Impact Statement were presented in a series of tables, in which the airport-related emissions were forecast for various locations in the airports' vicinity, and the airports' contributions were added to a non-airport background concentration. The background concentrations were based on measurements at other locations and on Metropolitan Washington Council of Governments regional projections, and may or may not be representative of the non-airport contributions at each of the locations analyzed. It is important to note that the estimated total ambient concentration at any location is sensitive to the assumed background levels.

The National Capital Interstate AQCR complies with the nitrogen dioxide standard. Application of the dispersion model indicated that the standards may be exceeded at several locations under any of the alternative policies considered. Application of that model to the three new policy alternatives would result in similar indications. It is recognized that application of any simple dispersion model to reactive gases, such as nitrogen oxides, is likely to indicate artifically high estimates since it assumes that all nitrogen oxides are converted to nitrogen dioxide and that no other chemical reactions occur during the dispersion processes.

Nitrogen dioxide is related to the ozone level, which is a regional problem, not a local problem. It should be noted that the airport is a minor source of nitrogen dioxide within the AQCR in comparison to major sources such as power plants and motor vehicles. In a recent FAA/EPA study[3], the annual average nitrogen dioxide concentration at Washington National Airport was estimated to be 0.03 ppm with aircraft accounting for one-sixth of that estimated average. These levels are well below the standard, and the aircraft contribution is much smaller than indicated by the dispersion method.

The hydrocrabon standard was first set in 1971, but has been used as a guide in meeting EPA's national ambient standard for ozone. On May 15, 1981, the EPA proposed to recind this unused air quality standard because "review of the scientific data underlying this outdated standard confirms that it has no utility under the current Clean Air Act and should be dropped." The August 1980 Environmental Impact Statement discussed hydrocarbon emissions relative to the national ambient standards. This hydrocarbon "standard" would be exceeded for any of the policy alternatives, since the background (non-aviation) levels for hydrocarbon exceed the national ambient standard in either an urban (Washington National Airport) or rural (Dulles International Airport) setting.

3 "Impact of Aircraft Emissions on Air Quality in the Vicinity of Airports," FAA-EE-80-09A, July 1980.

The following discussion addresses the projected results of the alternative policies on ambient concentrations of carbon monoxide and particulates at Washington National Airport. There were no violations of the one-hour carbon monoxide or particulate standards in the analysis of the 1979 base case. The eight-hour carbon monoxide standard was estimated to be exceeded at half of the locations. The airport contribution, by itself, was below the standard, but the assumed background level was close to the standard without the airport contribution. A range of possible carbon monoxide background values for 1990 was included in the tables prepared for the five alternative policies analyzed. Based on the lower background value, all of the 1979 violations are eliminated under any of the policy alternatives analyzed earlier, and would be eliminated for either of the additional alternative policies presented here. Based on the higher background value, the ambient concentrations at one location (the vicinity of the terminal building at Washington National Airport) is projected to exceed the eight-hour carbon monoxide standard under the Expanded Growth Policy. This location is dominated by ground vehicle emissions. No other location was estimated to exceed the national ambient carbon monoxide standard for any of the five earlier policies. Comparing those results with the important parameters of the three additional policy alternatives presented here, it may be inferred that none of the three additional policy alternatives will result in a violation of the one-hour carbon monoxide standard, but the Unconstrained Activity

Policy alternative would contribute to a violation of the eight-hour carbon monoxide standard at the same location previously used. The two Controlled Activity alternatives would not contribute to a violation of that standard. These inferences assume that the higher value of background level and the same assumptions used in the earlier analyses are retained.

For 1990, a range of background particulate levels was used in estimating total suspended particulates. With the upper end of the range of the annual geometric mean of total suspended particulates estimated to equal the national ambient standard, any airport contribution results in a violation of that standard. Therefore, since background levels are high, any policy alternative causes a deleterious impact, despite a small airport contribution.

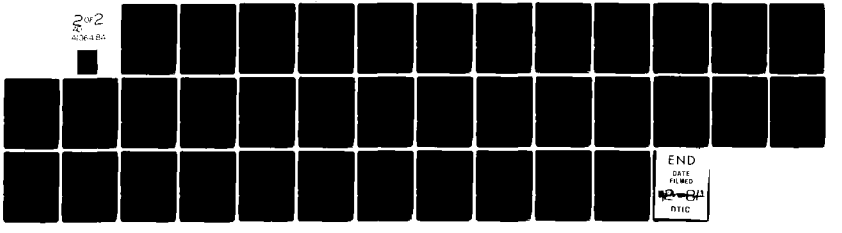
There are no present or future forecast violations of the carbon monoxide or particulates standards in the vicinity of Dulles International Airport as a consequence of any of the policy alternatives considered previously or in this supplement.

Mitigating Actions

It should be noted that these air quality analyses assumed "worst case" conditions, assumed that no changes would be made to the roadway system at the airport, and assumed that no other steps would be taken to mitigate emissions from surface vechicles. The adoption of an

AD-A106 484 FEDERAL AVIATION ADMINISTRATION WASHINGTON DC F/G 13/2
METROPOLITAN WASHINGTON AIRPORTS POLICY SUPPLEMENT TO THE AUGUS--ETC(U)
SEP 81

UNCLASSIFIED NL



operating policy would provide a basis for airport m...er planning which could result in an improvement to the internal roadway system. Such an improvement would translate into reduced pollution concentrations at selected receptors (such as the one in front of the terminal building).

SURFACE ACCESS

The August 1980 Environmental Impact Statement analyzed surface access to the three Washington-area airports, for the five policy alternatives presented there. The major effects among the five alternatives appeared at Washington National Airport, where the annual passenger volumes varied from 14,000,000 (Reduced Activity Policy) to 21,750,000 (Expanded Growth Policy). The relative impacts of each policy varied in relation to the number of passengers associated with each policy alternative. With the exception of some momentary traffic stoppages on the southbound off-ramp from George Washington Parkway to Washington National Airport (Level of Service E) under the Expanded Growth Policy, no serious traffic impacts were expected from the five policy alternatives.

The impact of the Unconstrained Activity Policy alternative on surface access will be quite similar to those presented in the August 1980 Environmental Impact Statement for the Expanded Growth Policy alternative. The impacts on surface access for the three Washington-area airports, under the two Controlled Activity Policy alternatives would be similar to those presented in the August 1980 Environmental Impact Statement for the two Controlled Growth alternatives.

ENERGY

Using the FAA's aircraft fuel burn model, fuel consumption estimates were derived for typical short and long haul flights to and from Washington National Airport for each of the following aircraft types. Since data were available for only these types, it was assumed that they were representative of the aircraft types serving Washington National Airport under the noise restriction alternatives.

2-engine narrow body (2ENB): DC-9, 757

2-engine widebody (2EWB): A-300, 767

3-engine narrowbody (3ENB): 727-200

3-engine widebody (3EWB): L1011, DC-10

Note: This assumption does not imply any finding by the Administrator as to the approved use of any of these models at Washington National Airport, which are not now operating there. These models of aircraft are cited purely to illustrate the expected performance characteristics for analysis purposes.

Table XI lists for Washington National Airport the May 1981 air carrier operations and the forecast operations for October 1981 and 1990 under the three new policy alternatives. Based on the forecasts in Table XI, total air carrier daily fuel consumption at Washington

National Airport was calculated (see Table XII). The absolute numbers in Table XII are gross estimates based on assumption of representative flight profiles, trip lengths, aircraft types, etc. Although the numbers do not quantify accurately the total daily fuel burn, the percentage differences among the numbers provide a useful estimate of the fuel impacts of the policy alternatives. Therefore, the fuel consumption data are indexed (each number in Table XII is divided by the May 1981 base case figure); the results are displayed in Table XIII.

There are four aspects to the noise restriction alternatives which impact the air carrier fuel consumption at Washington National Airport—scheduling limitations, noise limitations, aircraft limitations, and nonstop perimeter limitations. The following discussion briefly identifies the direction of the impacts of these variables.

Scheduling Limitations

Air carriers are currently limited to 40 operations per hour at Washington National Airport. The introduction of a 37 operations per hour limitation would normally result in fewer permitted operations and fewer gallons burned as a result. The August 1980 Environmental Impact Statement indicated that sufficient capacity exists at Baltimore-Washington International and Dulles International Airports to handle the forecast demand there for the next 10-15 years. Washington

National Airport, however, has a capacity constraint. Therefore, imposing a 37 operations per hour limitation provides an additional benefit in terms of energy by limiting congestion and air carrier delay, thereby minimizing excess fuel use per operation at Washington National Airport. Alternatives which allow unconstrained activity will produce the opposite effect. Fuel use will increase due to a greater number of operations and greater fuel consumption per operation caused by aircraft delays.

The scheduling limitation has little or no effect in the short run. In May 1981 air carriers were only using an average of 560 of the 640 daily operations plus extra sections allowed under the current policy (40 per hour x 16 hours). A limitation of 37 operations per hour allows 555 (37 per hour x 15 hours) daily air carrier operations plus extra sections. There is no difference between the fuel impact of the controlled activity and unconstrained activity alternatives in October 1981 because the number of operations is not significantly, if at all, different in these two cases.

In 1990, however, the scheduling limitation restricts the increase in fuel use significantly. The controlled activity case results in a 22 percent increase (34 percent with widebody aircraft) over the May 1981 figure; fuel use rises 37 percent (59 percent with widebody aircraft) with unconstrained activity.

Noise Limitations

The noise limitations will not have any significant effect on energy consumption in 1981. However, in order to meet the noise limitations after 1986, only new technology aircraft can be used at Washington National Airport in 1990. Therefore, air carriers wishing to serve Washington National Airport will achieve improved fuel efficiency as well as quieter operation.

The new technology aircraft generally offer greater seating capacity than the existing narrow bodies which serve Washington National Airport. Therefore, assuming load factors remain constant, the same number of passengers can be served with fewer flights. Nevertheless, under both alternatives fuel consumption increases from October 1981 to 1990 despite the use of the more fuel-efficient aircraft. Assuming more passengers are being seved at Washington National Airport in 1990, fuel efficiency (in terms of passenger miles per gallon) may increase although total fuel consumption also increases. In the unconstrained activity alternative, fuel use rises due to a significant increase in the number of operations as well as the introduction of larger capacity aircraft.

Aircraft Limitations

Under current restrictions, widebody aircraft are prohibited at Washington National Airport. If carriers continue to provide the same number of flights substituting widebodies on certain flights, fuel consumption will go up. From Table XIII it is obvious that in each

case fuel consumption is higher with widebody aircraft than without widebodies. The introduction of widebodies (which provide additional capacity and burn more fuel) at Washington National Airport is fuel-efficient only if the carriers reduce the number of flights to maintain load factors, or if passenger demand rises significantly to again maintain load factors. In these instances, overall fuel consumption may increase, but fuel efficiency in terms of passenger-miles per gallon will also increase.

Nonstop Limitation

Air carriers are currently limited to a 650 statute mile nonstop operating limitation, plus seven "grandfather" cities, at Washington National Airport. For the three additional alternative policies considered here, the nonstop perimeter is established at 1,000 statute miles. Air carriers would be expected to offer direct, nonstop service to several new major markets, e.g., New Orleans and Kansas City, which are within the new operating limitations. The average trip length for flights greater than 500 miles will increase somewhat, but not to a major extent. In those alternatives with controlled activity at Washington National Airport, the air carriers would be expected to drop some of the short-haul flights and substitute service to the newly available cities. Although total fuel consumption would rise to some extent, energy efficiency, in terms of passenger-miles per gallon, should increase since the longer stage lengths have a greater portion

of their flight time at cruise altitudes, where flight is more fuel-efficient.

SUMMARY

Based on the forecast of operations in Table XI, air carrier fuel consumption at Washington National Airport increases 11 percent from May to October 1981. The proposed scheduling limitation and noise restriction have no effect in the short run. Fuel use rises due to an increase in the number of operations and, to a lesser extent, the slightly longer average trip length resulting from the proposed 1,000 mile nonstop perimeter. The introduction of widebodies would cause an additional 2 percent increase in fuel consumption in 1981.

In the longer run, 1990 fuel consumption rises anywhere from 22 to 59 percent over the base case (May 1981) depending on the policy alternative. In 1990, the scheduling limitation is effective in controlling the increase in fuel consumption. Fuel use rises significantly more for the unconstrained activity alternative than for the controlled activity cases. The noise restriction also impacts fuel use in 1990. New technology aircraft which meet the 80 dBA noise limit generally offer greater seating capacity than the existing narrowbodies which serve Washington National Airport. Although total fuel use may rise, fuel efficiency (in terms of passenger miles per gallon) may also increase if sufficient demand exists to maintain or increase load factors.

OTHER ENVIRONMENTAL IMPACTS

The impacts in the remaining environmental disciplines, including parklands and historical sites; social and economic conditions; and natural systems, are contained within the range of impacts assessed in the August 1980 Environmental Impact Statement. Moreover, the impacts at Dulles International and Baltimore-Washington International Airports for the proposed revised policy alternatives are also reflected within the range of impacts assessed in the August 1980 Environmental Impact Statement.

TABLE XI

FORECAST OF AIR CARRIER OPERATIONS AT WASHINGTON NATIONAL AIRPORT

	1981	1990
Existing Conditions (May 1981)	560	N.A.
Controlled Activity*		
No Widebody Aircraft	589	589
With Widebody Aircraft	572	558
Unconstrained Activity*		
No Widebody Aircraft	596	676
With Widebody Aircraft	572	676
Controlled Activity Modified*		
No Widebody Aircraft	625	589
With Widebody Aircraft	608	558

*With Noise Restrictions

N.A. - Not Applicable

TABLE XII

AIR CARRIER FUEL CONSUMPTION AT WASHINGTON NATIONAL AIRPORT

(gallons per day)

	1981	1990
Existing Conditions (May 1981)	664,000	N.A.
Controlled Activity*		
No Widebody Aircraft	739,000	812,000
With Widebody Aircraft	747,000	892,000
Unconstrained Activity*		
No Widebody Aircraft	740,000	912,000
With Widebody Aircraft	747,000	1,055,000
Controlled Activity, Modified*		
No Widebody Aircraft	776,000	812,000
With Widebody Aircraft	794,000	892,000

*With Noise Restrictions

N.A. - Not Applicable

TABLE XIII

INDEX OF AIR CARRIER FUEL CONSUMPTION AT

WASHINGTON NATIONAL AIRPORT

	1981	1990
Existing Conditions (May 1981)	1.00	N.A.
Controlled Activity*		
No Widebody Aircraft	1.11	1.22
With Widebody Aircraft	1.13	1.34
Unconstrained Activity*		
No Widebody Aircraft	1.11	1.37
With Widebody Aircraft	1.13	1.59
Controlled Activity, Modified*		
No Widebody Aircraft	1.17	1.22
With Widebody Aircraft	1.20	1.34

*With Noise Restrictions

N.A. - Not Applicable

SECTION IV: UNAVOIDABLE ADVERSE EFFECTS AND ACTIONS TAKEN TO MINIMIZE HARM

All of the alternative policies considered in the August 1980 Environmental Impact Statement and this Final Supplement involve some unavoidable adverse effects on the environment in the Washington area. For example, there will be some degree of continued airport noise, aircraft engine emissions, use of energy, and other effects resulting from the operation of the three airports. In the evaluation of each of the alternative policies, measures to minimize unavoidable adverse effects have been considered. Those measures are, in fact, the primary factors considered in assessing each of the alternative policies.

It is clear, however, from a review of Section II of this Final Supplement and the August 1980 Environmental Impact Statement that there is no alternative which, if adopted, would minimize all of the adverse consequences. In addition, alternatives which might provide a positive result at one airport may, in fact, have a negative result at another of the three Washington-area airports. Thus, the process of selecting an operating policy for the Metropolitan Washington Airports requires a balancing of the overall benefits and costs obtained from those airports.

SECTION V: RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

None of the alternative policies considered in the August 1980 Environmental Impact Statement or this Final Supplement represents an irreversible action, nor would any foreclose permanently future new policies, if such were to become more advantageous. All alternatives considered seek to balance the productivity afforded by an efficient system of air transportation for the Washington area against the environmental impacts which that system imposes. A policy allowing the optimum use of each of the three airports is the intended goal of this decision process. That optimization is clearly seen to be different by each of the many factions affected by those airports. Unforeseen future constraints, for example, drastically curtailed petroleum supplies, could quickly shift the optimum balance of these factors.

SECTION VI: IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Each day's operation of the Washington-area airports represents an irretrievable commitment toward meeting the air transportation needs of the National Capital region. Each day's operation similarly represents an irretrievable use of fuel resources and the imposition of environmental impacts on the surrounding area. As noted before, a decision on the optimum operating policy for the Metropolitan Washington Airports seeks to provide a proper balancing of these uses of resources, to the overall benefit of the Nation and its society.

SECTION VII: LIST OF PREPARERS

This Final Supplement Environmental Impact Statement was prepared by the U.S. Department of Transportation, Federal Aviation Administration.

Personnel	Title & Organization	Qualifications
John E. Wesler	Director of Environment and Energy, FAA	BS-Marine Engineering MS-Acoustical Engineering MS-Optical Engineering 28 years' experience in sound propagation; 11 years' experience in aviation noise abatement.
Robert F. Eisengrein	Attorney, Office of Chief Counsel, FAA	BBA-Business Administration (Finance) JD-Law 20 years' experience in government and corporate law; 8 years' experience in administration.
Edmund W. Sellman	Chief, Noise Technology Branch, Office of Environment and Energy, FAA	MS-Aeronautical Engineering (Propulsion) Over 20 years' experience in aircraft power plants; 11 years' experience in aircraft noise control.
Emanuel M. Ballenzweig	Technical Advisor, Office of Environment and Energy, FAA	BS-Meteorology MS-Meteorology MS-Engineering 27 years' experience in various aspects of environmental sciences and engineering.
Charles C. Erhard	Environmental Affairs Officer, Metropolitan Washington Airports, FAA	BA-Business Administration MBA-Management Sciences Eight years' experience in airport planning and environmental sciences.
John W. Reynolds, Jr.	Environmental Specialist, Office Airports Planning and Programming, FAA	BS-Civil Engineering 14 years' experience in engineering and airport environmental planning.

SECTION VIII - RESPONSE TO SUBSTANTIVE COMMENTS

This section addresses comments specifically on the Draft Supplement to the Environmental Impact Statement as well as comments to the docket of the Notice of Proposed Rulemaking 81-8 that relate to the EIS. The comments received have been carefully reviewed and, in accordance with CEQ Regulations, 40 CFR 1503.4, this Final Supplement to the Environmental Impact Statement has been modified and, in some instances, factual corrections have been made. Issues raised by one or more commentors have been summarized without intentional bias to the meaning. The summarized comments and the FAA's responses are set out below.

I. Overall Adequacy of the EIS.

Comment: The Supplemental Draft EIS is deficient since it did not address all other alternatives, including "innovative" flight tracks; nor were the precise environmental benefits of the proposed restrictions quantified.

Response: The Draft EIS addressed 32 alternatives which, in the August 1980 FEIS, were condensed to five alternative policies covering the range of options available from a significant reduction in activity at National to an expanded role for the airport. The Draft Supplement EIS addressed four additional alternatives involving noise constraints. "Innovative" flight paths, such as the "scatter plan" currently under consideration by the Washington Metropolitan Council of Governments and the FAA, will be assessed and tested prior to their adoption. The

relative benefits of the noise constraints considered in the Supplemental EIS will serve the noise impacted community, regardless of the flight tracks into and out of the airport. Further, the noise impacted areas and population due to near term (1981) and longer term (post 1986) noise restrictions are adequately quantified on page III-7.

Comment: The FAA has not completed a noise exposure map and noise compatibility program for Washington National and Dulles International Airports, as required by Section 105 of the Aviation Safety and Noise Abatement Act of 1979 (ASNA).

Response: ASNA does not prevent the FAA from establishing or changing operating procedures at either airport. However, such changes will be reflected in the noise exposure maps and the noise compatibility programs being developed for those airports.

II. Noise Levels and Nighttime Restrictions

Comment: It is apparent that there is some doubt concerning the actual noise levels produced by the planes under discussion, as noted on page III-25. The Final Supplement should clarify this issue, and should use noise levels that have been verified by past experience.

Response: FAR Part 36 requires the reporting of turbojet and large transport category aircraft certificated noise levels in units of Effective Perceived Noise Level in decibels (EPNdB). Many airport and other community noise anlayses utilize a noise rating scale that is

based upon A-weighted decibels. For this reason, the dBA noise levels for aircraft under FAR Part 36 conditions have been estimated to provide a reference source for aircraft noise levels that is consistent with the many noise rating scales having dBA as the basic weighted measure. These listings also provide public exposure to progress in the control and abatement of airplane noise, as well as offer a common noise level reference for potential future reductions.

Since the noise levels are estimated as they might occur during type certification tests conducted under Appendix C of Part 36, these values are intended to provide a consistent basis for comparison of noise levels of major aircraft models rather than of individual aircraft. The noise levels of individual aircraft may also differ due to variations in weight and operating procedures from those used during certification. For instance, takeoff noise levels are reduced substantially as aircraft takeoff weight is reduced. Takeoff weights during normal in-service operations are often less than the maximum certificated weighted. In general, for equal noise control technology, the lower the maximum weight of an airplane the lower in the tabulation it will appear on the attached listings. Conversely, those aircraft normally associated with high weight, long range operation and, therefore, greater productivity, have the higher noise levels and will appear predominately at the top of the list. This aspect of increasing noise levels with increasing weight is embodied in the noise certification requirements of Part 36. The takeoff noise levels are also dependent on operating procedures applied. The takeoff noise level estimates in the table represent full thrust conditions for some aircraft and a reduced thrust condition, as permitted by FAR Part 36,

for other aircraft. Neither of these conditions may be representative of the in-service operation of a particular aircraft at a particular airport. (See FAA Advisory Circular 91-53, Noise Abatement Departure Profile.) Variations from the values of the noise estimates presented in this circular for individual flights at actual airports under nominally the same conditions could range within plus or minus 3 dBA for airplanes certificated in accordance with Part 36 or more for those airplanes not noise certificated. Additional variations in absolute value occur when aircraft operating conditions do not conform with those corresponding to noise certification. However, the FAA believes that the ranking of aircraft noise levels that occur under uniform certification conditions provides the best information currently available on the relative noisiness of airplanes over a wide variety of conditions.

Nevertheless, the FAA is reexamining the data contained in Advisory Circular 36-3A (from which Tables VI-IX were taken) to ensure that the noise levels are correct. To this end, many of the aircraft manufacturers have been requested to verify the levels in AC-36-3A as well as to provide data on noise levels in dBA versus takeoff gross weight.

Comment: The noise analysis for the proposed nighttime flights includes two important assumptions about noise attenuation in residential structures and the interruption of sleep at certain noise levels. These assumptions are not well supported or documented in the Draft Supplement. For instance, the 15-20 decibel attenuation of sound for residential structures appears to be a liberal estimate, and it is

not clear why this range was used. It is also stated that most people's sleep will not be disturbed by a noise level of 50 dBA, but this important point is not documented.

Response: The 15-20 decibel attenuation of sound for residential structures along the Potomac River corridor is considered conservative in the analysis. Page C-17 of the EPA's "Levels Document" (Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety dated March 1974) contains the following in relation to outdoor and indoor exposure: "a building reduces the level of most intruding outdoor environmental noises by 15 dBA or more (windows partially open)."

The citation for the data in the supplemental EIS regarding sleep disturbance is: "Noise and Sleep: Information Needs for Noise Control" by Jeffrey Goldstein and Jerome Lukas; Proceedings of the Third International Congress on Noise as a Public Health Problem, Feiburg, West Germany, September 25-29, 1978; pp. 442-448.

Comment: Using May 1981 operations data for the base case is inappropriate since May is not a month of peak activity.

Response: Average Day-Night Sound Level (Ldn) is the yearly average of the A-weighted sound level integrated over a 24-hour period. Therefore, it is not necessary to use operations from a month of peak activity for determining the base case noise exposure. May 1981 operations were used since that was the latest month from which data were obtainable in the preparation of the Supplement to the EIS.

Comment: Concern was expressed with regards to air quality impacts including the amount of additional burden to the emissions inventory and the fact that the "Unconstrained Activity" alternative would result in a violation of the eight-hour CO standard in the vicinity of the terminal building at Washington National Airport.

Response: A more precise analysis indicated that the emissions inventory at Washington National Airport as well as the airport and airport-related addition to the emissions inventory of the National Capital Air Quality Control Region and the bi-regional inventory, would be within the range of the previously analyzed alternatives. (The introduction of wide-body aircraft could increase these impacts by 10 percent.) The"Unconstrained Activity" alternative, which was projected to exceed the eight-hour CO standard if high background levels occur, can be mitigated by various means such as modifications to the internal roadway system.

Comment: Several commenters raised the issue of surface access to Washington National Airport. Some found the discussion of surface access in the Draft Supplement to be an inadequate, incomplete description of the impact and others referred to NPRM statements on access roads already at their capacity.

Response: The section on surface access in the supplement summarized the thorough analysis of surface access in the August 1980 Final Environmental Impact Statement. That analysis indicated that there would be no serious impacts for alternatives which maintain

passenger enplanements below 20 million per year. In those cases, momentary traffic stoppages on the southbound off-ramp from George Washington Parkway to Washington National Airport could be expected. References in the NPRM to capacity of roadways being exceeded today did not refer to the access roads, but to the internal airport roadways in the vicinity of the terminal. The need for improvements to the internal roadway system is addressed in a paragraph mitigating actions in the Air Quality section.

SECTION IX: COMMENTS RECEIVED ON DRAFT SUPPLEMENT TO THE AUGUST 1980 ENVIRONMENTAL IMPACT STATEMENT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
6TH AND WALNUT STREETS
PHILADELPHIA, PENNSYLVANIA 19106

AUG 11 1981

Mr. James A. Wilding, Director
Metropolitan Washington Airports
Federal Aviation Administration
Washington National Airport Hangar 9
Washington, DC 20001

Re: Metropolitan Washington Airports Policy

Dear Mr. Wilding:

We have reviewed the Draft Supplement to the EIS on the Metropolitan Washington Airports Policy, and have classified it in EPA's reference category ER-2. The attached copy of the Definition of Codes for the General Nature of EPA Comments provides an explanation of this rating. This classification will be published in the Federal Register in order to meet our public information obligations.

We are pleased to see that the goal of FAA's two new policy alternatives for Washington National Airport (WNA) is to create a reduction in the overall community noise impacts from aircraft. EPA is concerned, however, about the policy provision to allow nighttime operations, and we would like to see this issue reexamined in the Final Supplement.

The noise analysis for the proposed nighttime flights includes two important assumptions about noise attenuation in residential structures and the interruption of sleep at certain noise levels. These assumptions are not well supported or documented in the Draft Supplement. For instance, the 15-20 decibel attenuation of sound for residential structures appears to be a liberal estimate, and it is not clear why this range was used. It is also stated that most people's sleep will not be disturbed by a noise level of 50 dBA, but this important point is not documented. We do not believe that these aspects of the noise study lead to the kind of "worst case" analysis that should be included in an EIS.

It is also apparent that there is some doubt concerning the actual noise levels produced by the planes under discussion, as noted on page III-25. The Final Supplement should clarify this issue, and should use noise levels that have been verified by past experience.

The Draft Supplement also indicates that the "Unconstrained Activity" Alternative would result in a violation of the 8-hour CO standard at the WNA

terminal. As you know, EPA is not in a position to comment favorably on any proposal that would result in a violation of the NAAQS. We encourage the FAA not to pursue an alternative that would result in such a violation.

Sincerely yours,

for John R. Pomponio
Chief
EIS & Wetlands Review Section

Enclosure

Definition of Codes for the General Nature of EPA Comments

Environmental Impact of the Action

LO--Lack of Objections

EPA has no objections to the proposed action as described in the draft impact statement or suggests only minor changes in the proposed action.

ER--Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to reassess these aspects.

EU--Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

Adequacy of the Impact Statement

Category 1--Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2--Insufficient information

EPA believes that the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

Category 3--Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the draft statement.

If a draft impact statement is assigned a Category 3, ordinarily no rating will be made of the project or action, since a basis does not generally exist on which to make such a determination.

BEFORE THE

FEDERAL AVIATION ADMINISTRATION

UNITED STATES DEPARTMENT OF TRANSPORTATION

WASHINGTON, D.C.

METROPOLITAN WASHINGTON AIRPORTS	Docket 21955 Notice 81-8

COMMENTS OF NEW YORK AIRLINES, INC.

RE: DRAFT SUPPLEMENT TO THE AUGUST, 1980

ENVIRONMENTAL IMPACT STATEMENT

GERRY LEVENBERG, P.C.
GARY L. FONTANA
JEFFREY S. CHRISTIE
Van Ness, Feldman, Sutcliffe,
Curtis & Levenberg
A Professional Corporation
1050 Thomas Jefferson Street, N.W.
Seventh Floor
Washington, D.C. 20007
(202) 331-9400

Counsel for New York Airlines, Inc.

August 31, 1981

BEFORE THE

FEDERAL AVIATION ADMINISTRATION

UNITED STATES DEPARTMENT OF TRANSPORTATION

WASHINGTON, D.C.

METROPOLITAN WASHINGTON AIRPORTS	Docket 21955 Notice 81-8

COMMENTS OF NEW YORK AIRLINES, INC.
RE: DRAFT SUPPLEMENT TO THE AUGUST, 1980
ENVIRONMENTAL IMPACT STATEMENT

New York Airlines, Inc. (New York Air") submitted the following comments on the "Draft Supplement to the August, 1980 Environmental Impact Statement" dated June, 1981.

Comment #1: It is inappropriate to use May, 1981, as the base period for calculating the impact of the proposed policy, since May is not a peak travel month. According to National Airport tower logs, the average number of air carrier flights on weekdays in July, 1981, was 628. In May, the average was only 588. These differences, amounting to 40 flights per day, will clearly have a substantial impact on any underlying analysis.

Comment #2: The draft fails to provide an adequate explanation for the 30 percent increase in the number of households within the 65 and 75 Ldn contours since the August, 1980, EIS. (See pages III-4 to III-8.)

Comment #3: It is a fallacy to assume that reducing the number of air carrier operations to 37 per hour will

save fuel. (See page III-48.) If the aircraft are not used at National, they will certainly be put into service somewhere else and will burn the same number of gallons as before.

Comment #4: It is not necessarily true that a reduction in flights at National will save fuel by reducing airborne delays. (See page III-48.) This depends entirely on whether the aircraft denied access to National are put into service at an airport with average delays equal to or greater than those at National. In any event, the savings will be marginal at best.

Comment #5: The Draft fails to provide any explanation for the failure of the Department to chose the "Unconstrained Activity with Noise Restrictions" alternative. It appears to be superior to the chosen policy in every respect.

Respectfully submitted,

GERRY LEVENBERG, P.C.
GARY L. FONTANA
JEFFREY S. CHRISTIE
Van Ness, Feldman, Sutcliffe,
Curtis & Levenberg
A Professional Corporation
1050 Thommas Jefferson Street, N.W.
Seventh Floor
Washington, D.C. 20007
(202) 331-9400

Counsel for New York Air

August 31, 1981

COMMONWEALTH of VIRGINIA

J B JACKSON, JR
ADMINISTRATOR

Council on the Environment

903 NINTH STREET OFFICE BUILDING
RICHMOND 23219
804 786 4500

August 13, 1981

Mr. John E. Wesler
Director of Environment and Energy
800 Independence Avenue, S.W.
Washington, D.C. 20591

Dear Mr. Wesler:

The Commonwealth of Virginia has completed its review of the draft supplement to the Final Environmental Impact Statement on the Metropolitan Washington Airports Policy. The Council on the Environment is responsible for coordinating the State's review of federal environmental documents and for responding on behalf of the Commonwealth to appropriate federal officials. The following agencies have taken part in this review:

Department of Aviation
Department of Highways and Transportation
State Air Pollution Control Board
Office of Emergency and Energy Services.

The Commonwealth of Virginia supports the proposed policy, since it will provide a distinct improvement over present conditions in regard to noise levels at National Airport and its environs. The Commonwealth hopes that a way will be found to ensure the provision of a sufficient number of commuter aircraft slots at National to serve adequately the growing needs of air travelers to and from Virginia cities.

The limitation of air carrier activities at National Airport is, of course, a desirable goal from the standpoint of air quality. This goal will be reached more readily when the Dulles Access Road is completed to Route 66 and further ground transportation improvements are made.

Other comments of reviewing agencies are attached.

Thank you for the opportunity to review this document.

Sincerely,

J. B. Jackson, Jr.

Attachments

cc: The Honorable Maurice B. Rowe, Secretary of Commerce and Resources
Mr. Michael A. Waters, Department of Aviation
Mr. R. L. Hundley, Department of Highways and Transportation
Mr. K. Mercer Melvin, State Air Pollution Control Board
Mr. A. E. Slayton, Jr., Office of Emergency and Energy Services

JBJ/CHE/all

CHE

COMMONWEALTH of VIRGINIA

State Air Pollution Control Board

ROOM 1106, NINTH STREET OFFICE BUILDING
RICHMOND, VIRGINIA 23219
TELEPHONE (804) 786-5478

V. R. MEYER
EXECUTIVE DIRECTOR

August 7, 1981

Charles H. Ellis, III
Environmental Impact Coordinator
Council on the Environment
Room 903, Ninth Street Office Building
Richmond, Virginia 23219

Dear Mr. Ellis:

The staff of the State Air Pollution Control Board reviewed the Draft Supplement to the August 1980 EIS concerning Metropolitan Washington Airports Policy.

The two additional policies are primarily concerned with noise reductions. However, the new proposed Control Activity Policy would also reduce the annual passenger use by one-million persons per year from the level in the previously proposed policy that was to become effective October 25, 1981.

The most acceptable alternative from the standpoint of air quality is the Reduced Activity Policy at Washington National Airport. This would reduce vehicular traffic thus reducing hydrocarbon and carbon monoxide emissions and providing concomitant improvement in ozone and carbon monoxide air quality.

Sincerely,

J. C. Ruehrmund
Director
Division of Operations & Procedures

JCR/KMM/evb

cc: Michael A. Waters,
Department of Aviation

COMMONWEALTH of VIRGINIA

Council on the Environment

903 NINTH STREET OFFICE BUILDING
RICHMOND 23219
804 786 4500

August 12, 198?

MEMORANDUM

TO: File

FROM: C. Ellis

SUBJECT: Department of Aviation Comments - Metro Washington Airports Policy

Aviation per Mike Waters (today), applauds the policy in that it will reduce noise levels around National Airport. The Department is concerned about slot limitations on commuter aircraft since commuters are the main transportation link to Washington from major Virginia cities.

CHE/all

COMMONWEALTH of VIRGINIA

DEPARTMENT OF HIGHWAYS & TRANSPORTATION
1221 EAST BROAD STREET
RICHMOND, 23219

August 10, 1981

Metropolitan Washington Airports
Policy - Draft Supplement to
August 1980 EIS

Mr. Charles Ellis
EIS Coordinator
Council on the Environment
Ninth Street Office Building
Richmond, Virginia 23219

Dear Mr. Ellis:

Thank you for the opportunity to review this document. We have the following comments and questions.

There is no discussion in the document about the effects of improved surface access to Dulles. With the opening of I-66 and the Dulles Airport Access Road extension, Dulles should be more attractive to both the airlines and their passengers. How will this affect growth at National?

Provisions to limit activity at National should be contingent upon adequate access being provided to Dulles. Such access could be achieved by construction of the Dulles Access Road between Routes 123 and 66. Furthermore, express bus service between the West Falls Church Metro Station and Dulles would also enhance access. Ultimately, the most desirable means of access would be direct Metro rail service to Dulles.

Sincerely,

R. L. Hundley
Environmental Engineer

cc: Mr. William G. Plentl
Department of Aviation

Northern Virginia
Planning District Commission

7309 Arlington Blvd. • Falls Church, Virginia 22042 • 703-573-2210

August 18, 1981

Mr. John E. Wesler
Director of Environment and Energy
Federal Aviation Administration
800 Independence Avenue, S.W.
Washington, D.C. 20591

Dear Mr. Wesler:

The Northern Virginia Planning District Commission (NVPDC) has reviewed the Draft Supplement to the August 1980 Environmental Impact Statement and recommends favorable review with the following comments:

NVPDC supports the objectives of the proposed policy to achieve a more balanced utilization of the region's airports through a managed growth program for National Airport, consequently enhancing the role of Dulles Airport. In particular, the Commission concurs with the concept of an annual passenger ceiling at National Airport and the decision to enhance ground access to Dulles Airport by accelerating completion of the Dulles Access Road Extension to I-66 and the commitment to improve the quality of bus service to this facility.

However, NVPDC believes that this revised policy still does not go far enough in effecting a significant diversion of operations from National to Dulles, as recommended in the Commission's comments on the 1978 and 1979 Draft Environmental Impact Statements and the 1980 Final Environmental Impact Statement. While the revised policy's 16 million annual passenger ceiling is an improvement on the 1980 policy's 17 million ceiling, it would ensure that National will remain the region's primary airport for the foreseeable future, retaining nearly 45% of the region's projected air passenger traffic in 1990, and continuing the problems of aircraft noise, air pollution and the overburdening of ground access facilities. Therefore, NVPDC wishes to restate its previous recommendation that a 14 million annual passenger ceiling be established for National Airport, which represents a slight reduction in the present level of use.

The Commission concurs with the concept of daytime noise limitations at National Airport, and particularly with the need to make such noise limitations more stringent in the future when the new generation of quieter aircraft becomes generally available. However, NVPDC is greatly concerned about the policy formally establishing 24-hour operations at National Airport. The nighttime noise limitations appear to be stringent enough to exclude most commercial aircraft currently operating out of National. This could change when aircraft that can meet the standard come into general use resulting in far more nighttime operations out of National than at present. This will extend the noise burden for those who are impacted by commercial operations at National Airport to 24 hours a day. Meteorological conditions can cause a variance in sound pressure levels of as much as 20 dBA, which could mean a perceived noise level 4 times the limitation of 85 dBA as determined on approach and 72 dBA as determined on takeoff. Such meteorological conditions would in effect raise the nighttime noise limitations to 105 dBA on approach and 92 dBA on takeoff. Therefore, the absence of a mandatory curfew could mean that nighttime aircraft operations will result in severe noise impacts at certain times of the year. However, the draft EIS supplement does not consider the potential impacts of varying meteorological conditions. In light of the potential adverse impacts of nighttime operations, we wish to restate our previous position, as stated in the Commission's comments on the August, 1980 Final Environmental Impact Statement, supporting a mandatory nighttime curfew.

The decision to extend National Airport's non-stop service perimeter from 650 miles to 1,000 miles is likewise a step in the wrong direction. Such a change would further blur the distinction between the proper roles for National and Dulles Airports, discouraging short-haul flights at National Airport and dealing a further blow to plans for the proper utilization of Dulles as a primary airport in the region. Recognizing that many sections of the country feel that the current perimeter restriction is not applied equitably due to the existence of seven "grandfathered" cities, NVPDC recommends that rather than increasing the perimeter to 1,000 miles in order to eliminate the need for grandfathering, non-stop service to these seven cities should be eliminated both for the sake of equity and to achieve the proper relationship between National and Dulles Airports.

The Commission is also concerned about the revised policy's proposal to allow extra sections of scheduled flights without regard to hourly slot allocations. Giving official sanction to this practice circumvents both the letter and intent of the policy's limitation on available slots and jeopardizes the equity of the slot allocation process.

NVPDC is pleased that in the revised policy the FAA has reconsidered its position on the use of widebody aircraft at National Airport, requiring further proof on a model by model basis that such aircraft can operate safely at National and that introduction of such aircraft would be compatible with the airport's gate, apron, baggage and passenger handling, and roadway facilities.

The Commission also recommends that further consideration be given to the possibility of future extension of METRO rapid rail to Dulles Airport, and to other alternative ground transportation modes should they appear feasible in the future.

Your cooperation in the intergovernmental review process is appreciated.

Sincerely yours,

John W. Epling
Executive Director

SUBJECT: A-95 Review by Regional Clearinghouse
Project Title: Draft Supplement to August 1980 EIS - Metro. Washington Airports Policy
Applicant: DOT-FAA
SAI: VA820724-01500800001
NVPDC Staff Contact: Anita Capps

cc: Charles Ellis, Virginia Council on the Environment


LMED
81